1. Mechanism of action of quinolones is?

a) DNA gyrase inhibitors

b) Bind to 30 s unit

c) Bind to bacterial cell membrane

d) Bind to tetrahydofolate reductase

Correct Answer - D
DNA gyrase inhibitors REF: Goodman Gillman's 11th ed p. 722
The quinolone antibiotics target bacterial DNA gyrase and topoisomerase IV. For many gram positive bacteria, topoisomerase IV is the primary target. For many gram-negative bacteria, DNA gyrase is the primary quinolone target.

2. Drug NOT used in pulmonary hypertension -

a) Calcium channel blocker

b) Endothelin receptor antagonist

c) Alpha blocker

d) Prostacyclin

Correct Answer - C

alpha blockers *[Ref- Harrison 17th/e p 1577, 1578]* Pulmonary hypertension

General management

- Diuretic therapy may be useful as it relieves pulmonary edema.
- Anticoagulant therapy is advocated for all patients.

Specific management

Calcium channel blockers

- *Patients who have substantial reductions in pulmonary arterial pressure in response to short acting vasodilators at the time of cardiac catheterization should he initially treated with calcium channel blockers.*

Endothelin receptor antagonist

- *Bostenan is a non-selective endothelium receptor antagonist, is an approved t/t ¸for patients who are NYHA .functional classes III and IV.*

Phosphodiesterase-5 inhibitors

- Slidenafil is used for patients who are NYHA functional classes II and

Prostacyclins

- Iloprost is a prostacyclin analogue used in PAH patients who are

NYHA functional classes III and IV.

- *Pulmonary circulation is unique in that it accommodates a blood flow that is almost equal to that of all the other organs of body but still maintains low pressure.*
- *The factors responsible for low pressure in pulmonary circulation (even with large volume of blood) are:- - Larger diameter of pulmonary vessels due to thin wall of pulmonary artery and arterioles.*

  - Greater compliance (distensibility) of pulmonary vessels.

  numoral factors responsible for maintaining pulmonary circulation:? Normally
- *NO causes vosodilation and proliferation of smooth muscles by r in the conc. of cGMP —) this increases the diameter of pulmonary vessels.*
- *causes vosodilation and decreased proliferation of smooth muscles by increasing the conc. of cAMPincrease in the diameter of pulmonary vessels. Prostaglandin also decreases coagulation. Endothelin causes vasoconstriction and increase smooth muscle proliferation si lumen of pulmonary vessels. - Normally the vasodilators and antiprolifeave effects of NO and PGI_7 dominate*

  In Pulmonary hypertension

- *There is l production of NO (and cGMP) and PGI_2 (and cAMP), t vasoconstriction and proliferation of smooth*

  muscles, st lumen of pulmonary vessel. Decreased production of PGI_2 also causes increased coagulation.

- There is *T production* of endothelin, /vasoconstriction and smooth muscle proliferation, .1 lumen.
- *Drug therapy in puhnonan hypertension is targetted at these growth factor pathways which are involved in the pathogenesis of pulmonary hypertension:*

  Endothelium receptor antagonist
- *Bostenan is an endothelin receptor antagonist. It prevents endothelin mediated contraction of vessels. Phosphodiesterase-5*

inhibitors

- *Nitric oxide mediates its action through increasing cGMP concentration. Increased cGMP relaxes the vessels. cGMP is degraded by an enzyme phosphodiesterase-5 (PDE-5).*
  - Slidenafanil is a phosphodiesterase 5 inhibitor. It reduces the degradation of cGMP, thus causing vascular relaxation and reducing pulmonary hypertension.
  Prostacyclins
- *In pulmonary hypertension, the level of prostacycline is reduced.*
- *This causes pulmonary constriction as prostacyclin causes dilatation of pulmonary vessels.*

3. **Regarding efficacy and potency of a drug, all are true, EXCEPT:**

a) In a clinical setup, efficacy is more important than potency

b) In the log dose response curve, the height of the curve corresponds with efficacy

c) ED50 of the drug corresponds to efficacy

d) Drugs that produce a similar pharmacological effect can have different levels of efficacy

Correct Answer - C

ED50 refers to Effective Dose of a drug needed to produce a particular response in 50% of population. It is a quantitative measure of the potency of a drug. Smaller the ED50 value, more potent is the drug.

Ref: Encyclopedia of Psychopharmacology By Ian P. Stolerman, Volume 2, Page 456

4. **Zero-order kinetics is otherwise known as saturation kinetics. It is independent of:**

a) Plasma concentration

b) Clearance

c) Volume of distribution

d) Half life

Correct Answer - A
Ans. A. Plasma concentration

- In zero-order kinetics or saturation kinetics, elimination mechanisms become saturated and unable to process more drugs when drug concentrations rise.
- Consequently, ***for drugs that are eliminated by zero-order kinetics, a constant amount of drug is eliminated per unit time regardless of drug plasma concentration.***

5. **Filgrastim is used in treatment of:**

a) Anemia

b) Neutropenia

c) Malaria

d) Filarial

Correct Answer - B
Ans. is. B. Neutropenia
Filgrastim is a recombinant human granulocyte colony stimulating factor (G-CSF) which is a 175 - aminoacid glyco-protein.
It differs from the natural granulocyte stimulating factor due to its lack in glycosylation and the presence of an extra N-terminal methionine. It has proved to be effective in the treatment of severe neutropenia.
Ref: Goodman and Gilman's The Pharmacological Basis of Therapeutics, 11th Edition, Pages 1429-32; Immunopharmacology By Manzoor M. Khan, Pages 49-50

6. **Guanethidine is used in the treatment of which of the following condition?**

a) Thyrotoxic ophthalmopathy

b) Ptosis

c) Bell’s palsy

d) Horner’s syndrome

Correct Answer - A

Guanethidine (10%) eye drops is useful in decreasing lid retraction in Thyrotoxic ophthalmopathy. It is an adrenergic neuron blocker which acts by inhibiting the release of noradrenaline in response to nerve stimulation.

7. **Finasteride is a:**

a) 5 alpha reductase inhibitor

b) PDE inhibitor

c) Alpha la blocker

d) Androgen receptor blocker

Correct Answer - A

Finasteride is a competitive inhibitor of the enzyme 5-alpha reductase which is responsible for the conversion of testosterone into a more active dihydrotestosterone responsible for the androgen action.

When used in benign prostatic hypertrophy, it reduces the prostate size and increased peak urinary flow rate.

It is also used in male pattern baldness and as a palliative treatment in prostatic carcinoma.

Ref: K D Tripathi Textbook of Pharmacology, 5th Edition, Page 272

8. **A 47-year-old woman presents with complaints of nervousness and increased sensitivity to hot weather. She is diagnosed with hyperthyroidism and prescribed propylthiouracil. What is the principal mechanism by which this drug acts?**

a) Decreasing the efficacy of TSH binding to the thyroid TSH receptor

b) Decreasing the rate of proteolysis of thyroglobulin

c) Increasing the amount of 3,3',5'-triiodothyronine (reverse T3; rT3)

d) Inhibiting deiodination of thyroxine (T4)

Correct Answer - D

Propylthiouracil works primarily by inhibiting the peripheral conversion of T4 to T3.
The thyroid extracts iodide from the plasma and, in an oxidative process, iodinated tyrosine residues in thyroglobulin molecules. Monoiodotyrosine and diiodotyrosine are formed and then coupled to produce either thyroxine (tetraiodothyronine, T4) or triiodothyronine (T3).

Proteolytic cleavage of thyroglobulin molecules leads to free T3 or T4, which is then released into the circulation; T3 is several times more potent than T4. Peripheral deiodination of T4 at the 5' position leads to T3 formation (mainly in the liver); this step is inhibited by propylthiouracil.
Decreasing the efficacy of TSH binding, decreasing the rate of thyroglobulin proteolysis, increasing the amount of rT3 formation, and inhibiting the uptake of iodide into the thyroid, would all tend to decrease the formation of thyroid hormones in the thyroid itself.

9. **Spironolactone should NOT be given with the following pharmacological agent:**

a) Chlorothiazide

b) b-blocker

c) ACE inhibitors

d) Amlodipine

Correct Answer - C

Unlike most other diuretics, K+-sparing diuretics reduce urinary excretion of K+ and can cause mild, moderate, or even life-threatening hyperkalemia.

The risk of this complication is greatly increased by renal disease (in which maximal K+ excretion may be reduced) or by the use of other drugs that reduce or inhibit renin (beta blockers, NSAIDs, aliskiren) or angiotensin II activity (angiotensin- converting enzyme inhibitors, angiotensin receptor inhibitors).

Since most other diuretic agents lead to K+ losses, hyperkalemia is more common when K+-sparing diuretics are used as the sole diuretic agent, especially in patients with renal insufficiency.

Ref: Ives H.E. (2012). Chapter 15. Diuretic Agents. In B.G. Katzung, S.B. Masters, A.J. Trevor (Eds), *Basic & Clinical Pharmacology*, 12e.

10. Maximum plasma protein bound drug is ?

a) NTG

b) Verapamil

c) Aspirin

d) GTN

Correct Answer - B
Ans. is 'b' i.e., Verapamil
o Among the given options only verapamil has significant plasma protein binding (see text of the chapter).

11. CYP3A inhibitors is/are -

a) Ritonavir

b) Amiodarone

c) Verapamil

d) a and c

Correct Answer - D
Ans. is 'a' i.e., Ritonavir; 'c' i.e., Verapamil
CYP3A4/3A5 inhibitors are
o Ritonavir o Erythromycin o Itraconazole o Troieandomycin o *Verapamil*
o Clarithromycin o Azamulin o Diltiazem o Ketoconazole
o Grapefruit juice (Furano coumarins)

12. In the metabolism of alcohol, high doses of aspirin & phenytoin, mechanism is *?*

a) First pass kinetics

b) First order kinetics

c) Zero order kinetics

d) Second order kinetics

Correct Answer - C
Ans. is **'c' i.e.,** Zero order kinetics

13. Type B adverse drug reaction -

a) Augmented effect of drug

b) Unpredictable Bizzare reaction

c) Effect seen on chronic use of drug

d) Delayed effect of drug

Correct Answer - B
Ans. is 'b' i.e., Unpredictable Bizzare reaction
Types of adverse drug reaction
1. Types A (Augmented) reaction.
2. Types B (Bizzare) reaction
3. Types C (Chronic) reaction
4. Types D (Delayed) effects
5. Types E (Ending of use) reaction

14. Urinary bladder spasmolytic having local anaesthetic property-

a) Tamsulosin

b) Terazosin

c) Oxybutynin

d) Yohimbine

Correct Answer - C
Ans. is 'c' i.e., Oxybutynin
o Oxybutynin, a newer antimuscarinic, has high affinity for receptors in urinary bladder and salivary glands alongwith additional smooth muscle relaxant and local anaesthetic properties.

15. Dopamine all of the following is true Except?

a) *Causes* increase in GI Isehemia

b) Positive ionotropic

c) Improves renal perfusion

d) Causes Vasoconstriction

Correct Answer - A
Ans. is 'a' i.e., Causes increase in GI Ischemia
o Dopamine acts on dopamine (D_i & D_2) and adrenergic (a_1 + a_2 + $[3_1$) receptors, with no action on p, receptors.
o At lowest effective dose it stimulates D_1 receptors in renal & mesentric blood vessels —> improves renal and mesentric perfusion.
o At moderately high doses it acts as 13, agonist --> positive ionotropic.
o At high doses it activates a-adrenoreceptors —> vasoconstriction.

16. All are alpha-blocker except?

a) Atenolol

b) Prazosin

c) Indoramine

d) Idazoxan

Correct Answer - A
Ans. is 'a' i.e., Atenolol

17. The side effects of digitalis are all except *?*

a) Ventricular tachycardia

b) Vasodilatation

c) Nausea and vomiting

d) Ventricular Bigemini

Correct Answer - B
Ans. is 'b' i.e., Vasodilatation
Digitalis causes mild vasoconstriction (not vasodilatation).

18. Which of the following potassium sparing diuretic alters cardiac mortality-

a) Spironolactone

b) Amiloride

c) Triamterene

d) Epleronone

Correct Answer - A
Ans. is 'a' i.e., Spironolactone
o Among potassium sparing diuretics, aldosterone antagonists (Spironolactone, eplerenone) reduce mortality in CHF.

19. Anti androgen used in heart failure ?

a) Carvedilol

b) Sampatrilat

c) Spironolactone

d) Abiraterone

Correct Answer - C
Ans. is 'c' i.e., Spironolactone
o Spironolactone and eplerenone are the aldosterone antagonists. They are used as potassium sparing diuretics. Their diurectic effect is quite feeble, but in CHF these drugs reduce the mortality (at doses lower than diuretic doses) by antagonizing the effect of aldosterone (reversal of remodelling). Spironolactone also possesses anti- androgenic effects.

20. Iodine content in amiodarone -

a) 10 - 20%

b) 20 - 40%

c) 40 - 60%

d) 60 - 80%

Correct Answer - B
Ans. is 'b' i.e., 20 - 40%

21. Which is true about calcium channel blockers -

a) Verapamil causes reflex tachycardia

b) Diltiazam causes reflex tachycardia

c) Nifedipine causes reflex tachycardia

d) Nifedipine has longer $t^{1/2}$ than felodipine

Correct Answer - C
Ans. is 'c' i.e., Nifedipine causes reflex tachycardia
DHPs (nifedipine) cause reflex tachycardia.
o Felodipine - it differs from nifedipine in having greater vascular selectivity, large tissue distribution and longer $t^{1/2}$.

22. Centrally acting antihypertensive drug is *?*

a) Phenoxybenzamine

b) Methy ldopa

c) Propanolol

d) Prazosin

Correct Answer - B
Ans. is 'b' i.e., Methyldopa
o Centrally acting sympatholytic antihypertensives are clonidine, *methyldopa,* guanabenz, guanfacine, moxonidine and rilmenidine.

23. Wrong about clonidine is -

a) Alpha 2 receptor agonist

b) First line for AMID

c) Sudden withdrawal causes rebound hypertension

d) Controls loose motions due to diabetic neuropathy

Correct Answer - B
Ans. is 'b' i.e., First line for ADHD
* Behavioural therapy is the first line therapy for the treatment of ADHD. The first line drug for ADHD is Methylpheni date.
* Clonidine is a partial agonist with high affinity and high intrinsic activity at α_2 receptors.

- Sudden withdrawal of clonidine may cause life threatening hypertensive crisis.

* Clonidine is used to control loose motions due to diabetic neuropathy. It may be acting by α_2 receptor mediated enhancement of salt absorption in gut mucosa.

24. Which of the following causes increased rennin on prolonged use ?

a) Clonidine

b) Enalapril

c) Methyldopa

d) Blocker

Correct Answer - B
Ans. is 'b i.e., Enalapril

25. Side effect of thiazide diuretics are all except ?

a) Hyponatremia

b) Hypokalemia

c) Erectile dysfunction

d) Hypocalcemia

Correct Answer - A
Ans. is 'A' i.e., Hypocalcemia
Thiazides cause hypercalcemia (see above explanation).

26. Desmopressin is preferred over vasopressin because desmopressin -

a) More potent

b) More selective for Vireceptor

c) Has little vasconstrictor activity

d) a and c

Correct Answer - D
Ans. is 'a' i.e., More potent; 'c' i.e., Has little vasconstrictor activity
o *Desmopressin is longer acting*
o *Desmopressin is* ***V_2 selective —)*** *No V, mediated vasoconstriction.*
o Desmopressin is 12 times more potent than vasopressin.

27. In diabetes insipidus, diuretic showing paradoxical antiduretic activity -

a) Thiazide

b) Triamterene

c) Spironolactone

d) Furosemide

Correct Answer - A
Ans. is 'a' i.e., Thiazide

- Thiazide diuretics paradoxically decrease urine output in DI due to formation of cAMP in distal tubules effective in both central and nephrogenic DI.

28. True regarding Conivaptan is -

a) Vasopressin Antagonist

b) V2 selective action

c) Given orally

d) All

Correct Answer - A
Ans. is 'a' i.e., Vasopressin Antagonist

29. 5 HT 1 agonists used as ?(

a) Anti anxiety drugs

b) Antipsychotic drugs

c) GERD

d) Chemotherapy induced vomiting

Correct Answer - A
Ans. is 'a' i.e., Anti anxiety drugs
5-HT IA agonists (Buspiron, ipsapirone) act as antianxiety drugs.

30. PGE_2 cause all except -

a) Water retention

b) Uterine contraction

c) Flushing

d) None

Correct Answer - A
Ans. is 'a' i.e., Water retention
o PGE_2 causes increase in water excretion by inhibiting ADH action.

31. All are the following are the functions of PGEl except-

a) Erectile dysfunction

b) Erectile dysfunction

c) Induction of puberty

d) PDA

Correct Answer - C
Ans. is 'c' i.e., Induction of puberty

32. Dinoprost is -

a) PG El

b) PGE2

c) PGF2 alpha

d) PGI2

Correct Answer - C
Ans. is 'c' i.e., PG F2 alpha
o Dinoprost - PG F2 alpha, intraamniotically for midterm abortion.
o Dinoprostone - PG E2, intravaginally for midterm abortion.

33. Which enzyme is irreversibly inhibited by aspirin?

a) Lipooxygenase

b) Cyclooxygenase

c) Thromboxane synthase

d) Phospholipase

Correct Answer - B
Ans. is 'b' i.e., Cyclooxygenase

34. Which drug doesn't include DMARD:

a) Chloroquine

b) Vincristine

c) Azathioprine

d) Leflunomide

Correct Answer - B
Ans. is 'b' i.e., Vincristine
o *Disease modifying antirheumatic drugs (DMARDs)* :?
1. Immunosuppresants Methotrexate, azathioprine, cyclosporine
2. Sulfasalazine
3. Choloroquine or hydroxychloroquine
4. Leflunomide
5. Gold sod. thiomalate, Auranofin
6. d - Penicillamine

35. Which of the following drugs is useful in acute attack of gout ?

a) Furosemide

b) Sulfinpyrazone

c) Allopurinol

d) Piroxicam

Correct Answer - D
Ans. is 'd' i.e., Piroxicam
Drugs used in acute gout
i) NSAIDs Drug of choice
ii) Colehicine
iii) Corticosteroids

36. Efficacy of salmeterol is increased if it is given along with -

a) Theophylline

b) Corticosteroid

c) Ipratropium

d) Sodium cromoglycate

Correct Answer - B
Ans. is 'b' i.e., Corticosteroid
o Concurrent use of inhaled salmeterol with inhaled glucocorticoid produces effects equivalent to double dose of the corticoid alone.

37. Which is an intermediate acting insulin?

a) Insulin lispro

b) Regular insuin

c) NPH insulin

d) Insulin glargine

Correct Answer - C
Ans. is 'c' i.e., NPH insulin

38. HbA1C is decreased most by?

a) Biguanides

b) Sulfonylureas

c) Thiazolidinediones

d) Acarbosc

Correct Answer - B
Ans. **is 'b' i.e.,** Sulfonylureas
Effect of oral hypoglycemic in lowering blood glucose can be measured by reduction in HbAlC level
i) *Oral hypoglycemic with maximum decrease in HbAlc sulfonylureas.*
ii)Oral *hypoglycemic with minimum decrease in HbAIC Glucosidase inhibitors (Acrarbose, Migital)*

39. Which antidiabetic drug is used both for type I & II DM-

a) Sulphonylureas

b) Metformin

c) Acarbose

d) Pramlinitide

Correct Answer - D
Ans. is 'd' i.e., Pramlinitide
o Pramlinide is the only approved drug, beside insulin, to be used in both type-I and type-2 DM.

40. Least glucocorticoid action is seen with ?

a) Fludrocortisone

b) Cortisone

c) Dexamethasone

d) Betamethasone

Correct Answer - B
Ans. is 'b' i.e., Cortisone
Least potent glucocorticoid —> Cortisone

41. Steroid ingested for long time leads to all of the following except -

a) Avascular necrosis of head of femur

b) Cataract

c) Glaucoma

d) Growth retardation

Correct Answer - C
Ans. is 'c' i.e., Glaucoma
Glaucoma occurs after *topical* therapy (not systemic)

42. Which of the following is a synthetic estrogen ?

a) Estrone

b) Estriol

c) Estradiol

d) Diethylstibestrol

Correct Answer - D
Ans. is 'd' i.e., Diethylstibestrol
Synthetic progesterones
1. Progesterone derivatives —> Medroxyprogesterone, Megestrol, Dydrogesterone, Hydroxyprogesterone, Nomegestrol.
2. 1 9-Nortestosterone derivatives —> Norethindrone, Lynesternol, Allylesterone, Levonorgestrel, Desogestrel, Norgestimate, Gestodene.
Synthetic estrogens
1. Steroidal ----> Ethinylestradiol, *mestranol,* tibolone.
2. Nonsteroidal ----> Diethylstilbestrol, hexestrol, dienestrol

43. Which of the following is an aromatase inhibitor?

a) Tamoxifen

b) Letrozole

c) Danazol

d) Taxane

Correct Answer - B
Ans. is 'b' i.e. Letrozole
Aromatase inhibitors are of two types
o Type I (steroidal) aromatase inhibitor - They cause irreversible inhibition of aromatase, e.g. Exmestane, formestane. o Type II (non-steroidal) aromatase inhibitor - They cause reversible inhibition of aromatasxe e.g. Anastrazole, Letrozole, vorozale.

44. Which of the following is a selective progesterone receptor modulator-

a) Onapristone

b) Ulipristal

c) Nomegestrol

d) Toremifene

Correct Answer - B
Ans. is 'b' i.e., Ulipristal
o Ulipristal is a SPRM approved for use as an Emergency Contraceptive.
o SPRM (selective progesterone receptor modulators) : Asoprisnil, ulipristal, onapristone, mifepristone.

45. Side effect of oxytocin is all except ?

a) Placental abruption

b) Fetal distress

c) Peripheral vascular disease

d) Water intoxication

Correct Answer - C
Ans. is 'c' i.e., Peripheral vascular disease
o Side effects of Oxytocin are due to :
i) ADH like action - Water intoxication
ii) Excessive uterine contractions, prior to labour - Fetal distress, Placental abruption, Uterine rupture.

46. Short acting non delpolarizing blocker ?

a) Rocurorium

b) Suxamethonium

c) Mivacurium

d) Pancuronium

Correct Answer - C
Ans. is 'c' i.e., Mivacurium

47. Drug of choice in lignocaine toxicity -

a) Bretylium

b) Amiodarone

c) Isoprenaline

d) Diazepan

Correct Answer - D
Ans. is `d' i.e., Diazepan

- If lignocaine toxicity is suspected, stop the injection immediately.
- Ensure adequate oxygenation, whether by face mask or by intubation.
- Anticonvulsants such as benzodiazepines and barbiturates are the drug of choice for seizure control. o Succinylcholine is sometimes also used to terminate the neuromuscular effects of seizures.
- If CVS symptoms occur (cardiac depression and hypotension), IV fluid and vasopressor agents may be required.
- If metabolic acidosis develops, use of sodium bicarbonate can be considered, although, as in other instances of acute metabolic acidosis, this is controversial.

48. Cardiotoxicity of bupivacaine -

a) Depressed pacemaker activity

b) Toxic compound damaging myocardial cells

c) Depressed neural control on heart

d) Vascular thrombosis and Myocardial ischemia

Correct Answer - A
Ans. is 'a' i.e., Depressed pacemaker activity
o Local anaesthetics block cardiac sodium channels and thus depress abnormal cardiac pacemaker activity, excitability, and conduction. At extremely high concentrations, local anaesthetics can also block calcium channels.

49. Local anaesthetic injected directly into the tissue *?*

a) Infiltration anaesthesia

b) Nerve block

c) Field block

d) Bier's block

Correct Answer - A
Ans. is 'a' i.e., Infiltration anaesthesia
o Infiltration anaesthesia is the injection of local anaesthetic directly into tissue without taking into consideration the course of cutaneous nerve.

50. Which one of the following agents sensitizes the myocardium to catecholamines -

a) Isoflurane

b) Ether

c) Halothane

d) Propofol

Correct Answer - C
Ans. is 'c' i.e., Halothane
o *Halothane tends to sensitize the heart to arrhythmogenic action of adrenaline* - contraindicated in pheochromocytoma.

51. Trilene when used with Sodalime causes *?*

a) Renal damage

b) ARDS

c) Myocardial depression

d) Hepatitis

Correct Answer - B
Ans. is 'b' i.e., ARDS
o Following agents react with soda lime :
Sevoflurane is degraded by contact with CO_2 absorbant (soda lime) in anaesthesia machine, yielding a vinyl ether called Compound A which can cause renal damage.
Trilene produces phosgene (causing ARDS) and dicholoro acetylene (causes neurotoxicity) when used with sodalime.

52. Dissociative anaesthesia is produced by -

a) Ketamine

b) Etomidate

c) Propofol

d) Thiopentone

Correct Answer - A
Ans. is 'a' i.e., Ketamine

- *Dissociative anaesthesia is characterized by profound analgesia, immobility, amnesia with light sleep and feeling of dissociation from once own body and the surroundings Cataleptic state.*
  o *Ketamine (phencyclidine)* induces dissociative anaesthesia.

53. The drug for OPD analgesia is -

a) Morphine

b) Pethidine

c) Fentanyl

d) Alfentanil

Correct Answer - D
Ans. is 'd' i.e., Alfentanil

Drugs useful for day care surgery

o Propofol	o Sevoflurane, desflurane & isoflurane
o Midazolam	o Mivacurium
o Alfantanil	

54. Inducing agent of choice in shock ?

a) Isoflurane

b) Desflurane

c) Ketamine

d) Thiopentone

Correct Answer - C
Ans. is 'c' i.e., Ketamine

- Inducing agent of choice in Asthma & COPD → Ketamine.
- Inhalational agent of choice in Asthma & COPD → Halothane.

55. Fosphenytoin different from phenytoin in which of the following-

a) Can be used in absence seizures

b) Can be mixed with saline

c) Can be given orally

d) It is the drug of choice for myoclonic seizures

Correct Answer - B

Ans. 'b' i.e., Can be mixed with saline

- While phenytoin cannot be injected in a drip of glucose solution, fosphenytoin can be injected with saline and glucose.

56. Toxic dose of lithium -

a) 0.6

b) 12

c) 2.6

d) <0.6

Correct Answer - C
Ans. is 'c' i.e., 2.6

57. Lithium causes all except-

a) Polyuria

b) Nephropathy

c) Ebstein's anomaly

d) Hyperthyroidism

Correct Answer - D
Ans. is d i.e., Hyperthyroidism

- Lithium is known to exacerbate psoriasis and cause acne.
- It is known to cause Ebstein's anomaly in children.
- It also causes thyroid dysfunction, hypothyroidism and not hyperthyroidism.
- Lithium nephrotoxicity is well known.

58. Which of the following is a selective serotonin & nor epinephrine reuptake inhibitor ?

a) Fluoxetine

b) Venlafaxine

c) Sertaline

d) Arnoxipine

Correct Answer - B
Ans. is 'b' i.e., Venlafaxine
o Important SNRIs are :- *Venalafaxine,* Milnacipram, *desvenalafaxine, Duloxetine.*

59. All of the following are CNS stimulants except?

a) Amphetamines

b) Benzodiazepines

c) Cocaine

d) Methylphenidate

Correct Answer - B
Ans. is 'b' i.e., Benzodiazepines
CNS stimulants are *amphetamine, methylphenidate, atomoxetine, modafinil, cocaine, pemoline and caffeine.*

60. All of the following have interaction with warfarin except-

a) Barbiturate

b) Oral contraceptive

c) Cephalosporins

d) Benzodiazepens

Correct Answer - D
Ans. is 'd' i.e., Benzodiazepenes

61. Which prevents plasminogen activators?

a) Streptokinase

b) Aminocaproic acid

c) Reteplase

d) Clopidogrel

Correct Answer - B
Ans. is 'b' i.e., Aminocaproic acid
o Epsilon amino caproic acid (EACA) competitively inhibits plasminogen activation.

62. Clopidogrel mechanism of action -

a) Thromboxane A2 inhibition

b) Inhibit ADP mediated cAMP activation

c) GP II_b/In_a inhibitors

d) None

Correct Answer - B
Ans. is 'b' i.e., Inhibit ADP mediated cAMP activation

63. Most potent statin -

a) Simvastatin

b) Pravastatin

c) Rosuvastatin

d) Simvastatin

Correct Answer - C
Ans. is 'c' i.e., Rosuvastatin
o Two most potent statins are
Pitavastatin (most potent) and *rosuvastatin most potent).*

64. Antilipidemic drugs that prevent hypercholesterolemia by inhibiting absorption -

a) Ezetimibe

b) Orlistat

c) Cholestyramine

d) Statins

Correct Answer - A
Ans. is 'a' i.e., Ezetimibe
Ezetimibe inhibits the absorption of cholesterol by bidning to transporter [NPC-1L1 (Niemann Pick Cl, likel) SRBl, 145 KDa] located in intestinal brush border.
Note:
Orlistat also reduces cholesterol absorption, but it is an anti-obesity drug (not an antilipidemic drug).

65. Which is not a S/E of Cimetidine ?

a) Impotence

b) Gynaecomastia

c) Atrophic gastritis

d) Galactorrhea

Correct Answer - C
Ans. is 'c' i.e., Atrophic gastritis

66. The commonest side-effect of Cisapride is -

a) Abdominal cramps

b) Diarrhea

c) Headache

d) Convulsions

Correct Answer - B
Ans. is 'b' i.e., Diarrhea
Cisapride is a prokinetic agent and often produces loose stools (diarrhea is thus the commonest side effect)

67. Drug inhibiting bacterial protein synthesis are all except-

a) Aminoglycosides

b) Chloramphenicol

c) Clindamycin

d) Sulfonamides

Correct Answer - D
Ans. is `d' i.e., Sulfonamides
o Sulfonamides affect intermediary metabolism by inhibiting folate synthase.

68. Multiple drug resistance is transferred through -

a) Transduction

b) Transformation

c) Conjugation

d) Mutation

Correct Answer - C
Ans. is 'c' i.e., Conjugation
Resistance to multiple drugs is transmitted by R factor (plasmid)
- R factor is transferred from one bacterium to other by conjugation.
- Transduction and mutation usually cause resistance to one drug.
- Transformation is not involved significantly in drug resistance.

69. Longest acting sulphonamide is -

a) Sulfadiazine

b) Sulphadoxine

c) Sulfamethoxazole

d) Sulfamethiazole

Correct Answer - B
Ans. is 'b' i.e., Sulfadoxine
Sulfadoxine and sulfamethopyrazine are long acting sulfonamides.

70. Sulphonamide injection causes decrease in folic acid by?

a) Competitive inhibition

b) Non competitive inhibition

c) Uncompetitive inhibition

d) Allosteric inhibition

Correct Answer - A
Ans. is 'a' i.e., Competitive inhibition
Bacteria synthesize their own folic acid of which para aminobenzoic acid (PABA) is a constituent - *Sulfonamides, being structural analogues of PABA,* inhibit bacterial folate synthase *competitively.*

71. All are true about ciprofloxacin except ?

a) C/I in pregnancy

b) DNA inhibition

c) Most potent 1st generation fluoroquinolone

d) More active at acidic pH

Correct Answer - D
Ans. is 'd' i.e., More active at acidic pH
Ciprofloxacin is the most potent first generation FQ.
o Ciprofloxacin inhibit DNA gyrase and is contraindicated in pregnancy.
It is less active at acidic pH.

72. Which of the following is not mechanism for resistance to MRSA -

a) Resistance is chromosomally mediated

b) Produced mainly by alteration in PBPs

c) MRSA resistance is absolutely beta-lactamase independent

d) Intrinsic resistance is known

Correct Answer - C
Ans. is 'c' i.e., MRSA resistance is absolutely beta-lactamhhase independent

73. Bleeding is seen with the use of -

a) Cefaloridine

b) Cefazolin

c) Moxalactum

d) Ceftazidime

Correct Answer - C
Ans. is 'c' i.e., Moxalactam
o Ceftriaxone, cefoperazone, moxalactam & cefamandole can cause *hypoprothrmbinemia* and bleeding.

74. Widest spectrum aminoglycoside is -

a) Streptomycin

b) Amikacin

c) Framycetin

d) Netilmicin

Correct Answer - B
Ans. is 'b' i.e., Amikacin

75. Red man syndrome is due to -

a) Vancomycin

b) Polymyxin

c) Rifampicin

d) Teicoplanin

Correct Answer - A
Ans. is 'a' i.e., Vancomycin
Vancomycin can cause red men syndrome.

76. Not true about clofazamine *?*

a) Used in DLE

b) Causes ichthyosis and hyperpigmentation

c) Interferes DNA synthesis

d) Used in lepra reaction

Correct Answer - A
Ans. is 'a' i.e., Used in DLE
o Clofazimine interferes with template function of DNA, is used in lepra reaction and can cause icthyosis and hyperpigmentation.

77. Drug used in hepatitis B infection is -

a) Entecavir

b) Astacavir

c) Zanamivir

d) Abacavir

Correct Answer - A
Ans. is 'a' i.e., Entecavir
o Entecavir is the DOC for chronic hepatitis B infection.

78. Which of the following antimalarial is a slow acting schizonticide-

a) Artemether

b) Mefloquine

c) Pyrimethamine

d) Quinine

Correct Answer - C
Ans. is 'c' i.e., Pyrimethamine
o Antimalarials that act on erythrocytic phase of schizogony are called erythrocytic schizontocides. The available drugs can be divided into ?
1. Fast acting - Chloroquine, amodiaquine, *quinine, mefloquine,* halofantrine, lumefantrine, atovaquone, *artemisinin.*
2. Slow acting - *Pyrimethamine,* Proguanil, sulfonamides, tetracyclines.

79. Which of the following is not used as treatment for lymphatic filariasis -

a) Ivermectin

b) DEC

c) Praziquantel

d) Albendazole

Correct Answer - C
Ans. is 'c' i.e., Praziquantel
o Drugs used in lymphatic filiriasis are ***DEC,*** *ivermectin, albendazale* and doxycycline.

80. Drug that can cause hypertrophic pyloric stenosis is?

a) Tertacyclin

b) Erythromycin

c) Ampicillin

d) Rifampicin

Correct Answer - B
Ans. is 'b' i.e., Erythromycin
o Maternal and infant use of *erythromycin and other macrolide antibiotics* have been reported as risk factors for *infantile hypertrophic pyloric stenosis (IHPS).*

81. Resistance to Methotrexate develops due to?

a) Rapid Cancer cell multiplication

b) Deficiency of thymidylate kinase

c) Deficiency of thymidylate synthetase

d) Increased production of dihydrofolate reductase

Correct Answer - D
Ans. is 'd' i.e., Increased production of dihydrofolate reductase
Methotrexate resistance
o Methotrexate resistance may be due to any of the following mechanism *:?*
i) Defective transport into cells
ii) Production of altered form of DHFR that have decreased affinity for methotrexate
iii) Increased concentrations of intracellular DHFR through gene amplification or altered gene regulation
iv) Decreased ability to synthesize methotrexate polyglutamates
v) Increased expression of a drug efflux transporter, of the MRP (multidrug resistance protein) class

82. Which one of the following statements is false regarding vincristine -

a) It is an alkaloid

b) Its use is associated with neurotoxicity

c) It does not cause alopecia

d) It is a useful drug for induction of remission in acute lymphoblastic leukaemia

Correct Answer - C
Ans. is 'c' i.e., It does not cause alopecia
* Vincristine belongs to the plant alkaloid group of anticancer.
* Useful for inducing remission in childhood ALL *(not useful in maintenance therapy)*
* It can also be used for pediatric solid tumors (Wilm's tumor, neuroblastoma, rhabdomyosarcoma) and lymphomas.
* Prominent adverse effects?
* *Peripheral neuropathy*
Alopecia
SIADH

83. About vinca alkaloids true is *?*

a) Inhibits mitotic spindle

b) Enhances polymerization of tubulin

c) Inhibits topoisomerase I

d) Inhibits topoisomerase II

Correct Answer - A
Ans. is 'a' i.e., Inhibits mitotic spindle
Vinca alkaloids (vincristine) inhibit mitotic spindles by preventing polymerization of tubulin

84. All are true regarding Sunitinib except -

a) It inhibits tyrosine kinase receptors

b) It is used for renal cell carcinoma

c) It is used for the treatment of GIST

d) It is excreted primarily in urine

Correct Answer - D
Ans. is 'd' i.e., It is excreted primarily in urine

- Sunitinib inhibits multiple Tyrosine kinase receptors. **It** inhibits PDGF, VEGF and c-kit.
  o *Sunitinib* and *sorafinib* are used in renal cell carcinoma (in RCC there is overexpression of VEGF) and GIST (in GIST there is over expression of C-Kit & PDGF).
  o It is eliminated primarily by hepatic route with excretion in faeces.

85. Which of the following Anti neoplastic drugs SHOULD NOT be given by rapid IV infusion?

a) Cyclophosphamide

b) Cisplatin

c) Bleomycin

d) Cytosine arabinoside

Correct Answer - B
Ans. is `b ' i.e., Cisplatin
o Cisplatin is the most common culprit causing chemotherapy induced nausea and vomiting, therefore cisplatin is given as slow i.v. infusion(never bolus) to prevent vomiting.

86. Mode of action of azathioprine ?

a) ↑ IL-2

b) T-cell blockade

c) Decreased lymphophagocytic activity

d) Wide-spread antitumor activity

Correct Answer - B
Ans. is 'b' i.e., T-cell blockade

87. Intracranial pressure may be increased by all of the following drugs except -

a) Hypervitaminosis A

b) Corticosteroids

c) Quinolones

d) Aminoglycosides

Correct Answer - D
Ans. is 'd' i.e., Aminoglycosides

88. Which of the following drug causes hirsutism?

a) Phenytoin

b) Valproate

c) Carbamazepine

d) Phenobarbitone

Correct Answer - A
Ans. is 'a' i.e., Phenytoin

89. Extrapyramidal syndrome like side effects are seen in -

a) Haloperidol

b) Clozapine

c) Tetracycline

d) Ketoconazole

Correct Answer - A
Ans. is 'a' i.e., Haloperidol
Drugs causing extrapvramidal effects
o *Butyrophenones (Haloperidol)* o *Methyldopa* o *OCP'S* o *Reserpine*
o *Levodopa* o *Metoclopromide* o *Phenothiazines* o *Tricyclic Antidepressants*

90. Which of the following drugs is associated with untoward side effect of renal tubular damage-

a) Cisplatin

b) Steptozotocin

c) Methysergide

d) Cyclophosphamide

Correct Answer - A
Ans. is 'a' i.e. Cisplatin
Some nephrotoxic agents which cause tubular necrosis.
o Aminoglycosides o Colistin o Methoxyfluranes o Sulfonamides
o Amphotericin B o Cyclosporine o Polymyxin o Tetracyclines
o Cephaloridine o Intravenous immune globulin o Radioiodinated contrast o Acetaminophenmedium
o Cisplatin

91. All of the following are known adverse effects of thalidomide, except:

a) Diarrhoea

b) Teratogenicity

c) DVT

d) Neuropathy

Correct Answer - A
Ans is 'a' i.e. Diarrhoea
o Thalidomide causes constipation and not diarrhoea.

92. First order kinetics is:
September 2005

a) Absorption of the drug is independent of the serum concentration

b) Elimination of the drug is independent of the serum concentration.

c) Elimination of the drug is proportional to the serum concentration

d) Absorption of the drug is proportional to the serum concentration

Correct Answer - C
Ans. C: Elimination of the drug is proportional to the serum concentration.
A 0-order kinetics has a rate which is independent of the concentration of the reactant(s). Increasing the concentration of the reacting species will not speed up the rate of the reaction. Zero-order reactions are typically found when a material that is required for the reaction to proceed, such as a surface or a catalyst, is saturated by the reactants.
With first-order elimination, the rate of elimination is directly proportional to the serum drug concentration (SDC). There is a linear relationship between rate of elimination and SDC. Although the amount of drug eliminated in a first-order process changes with concentration, the fraction of a drug eliminated remains constant. The elimination rate constant (Kel) represents the fraction of drug eliminated per unit of time.

93. Which of the following drug is not given in acute mania:
September 2009

a) Lithium

b) Lamotrigine

c) Valproate

d) Olanzapine

Correct Answer - B
Ans. B: Lamotrigine
Lamotrigine is not recommended for acute mania.
It is especially useful in rapidly cycling bipolar depression.

94. Statin having longest half life:
September 2012

a) Rosuvastatin

b) Pravastatin

c) Simvastatin

d) Lovastatin

Correct Answer - A
Ans. A i.e. Rosuvastatin
Rosuvastatin

- It is a competitive inhibitor of the enzyme HMG-CoA reductase, having a mechanism of action similar to that of other statins.
- Its approximate elimination half life is 19 h and its time to peak plasma concentration is reached in 3-5 h following oral administration.

95. Low molecular weight heparin mainly inhibits which factor:
September 2009

a) Factor Ilia

b) Factor VIIIa

c) Factor Xa

d) Factor XIIa

Correct Answer - C
Ans. C: Factor Xa

96. Drug of choice for plasmodium vivax is:
September 2006

a) Mefloquine

b) Chloroquine

c) Artesunate

d) Quinine

Correct Answer - B
Ans. B: Chloroquine
Chloroquine remains the treatment of choice for clinical cure and suppressive prophylaxis of all types of malaria, except that caused by resistant P.falciparum.
In short time visitors to chloroquine-sensitive endemic areas, suppressive dose should be started 1 week before and continued for 4 weeks after returning.

97. Which of the following is teratogenic:

a) Folate

b) Cyanocobalamin

c) Vitamin A

d) Vitamin C

Correct Answer - C
Ans. C: Vitamin A
Pharmacological doses of vitamin A are teratogenic and in pregnancy the daily dose must not exceed 6000-8000 IU.
Synthetic analogues of vitamin A:
* Tretinoin
* Isotretinoin
* Etretinate
* Acetretin
* Teratogenic drugs
Drugs and medications:
* Tobacco Caffeine
* Drinking alcohol (ethanol) (fetal alcohol spectrum disorder),
* Isotretinoin (13-cis-retinoic acid)
* Temazepam
* Nitrazepam
* Aminopterin or methotrexate
* Androgenic hormones Busulfan
* Captopril, enalapril
* Coumarin
* Cyclophosphamide
* Diethylstilbestrol
* Phenytoin (diphenylhydantoin)

Lithium
* Methimazole
* Penicillamine
* Tetracyclines
* Thalidomide
* Trimethadione
* Flusilazole
* Valproic acid

Environmental chemicals:
* Polycyclic aromatic hydrocarbons (polynuclear aromatic hydrocarbons)
* Polychlorinated biphenyls (PCBs)
* Polychlorinated dibenzodioxins a.k.a dioxin,
* Organic mercury

Ionizing radiation:
* Atomic weapons fallout (Iodine-131, uranium)
* Background radiation

Diagnostic x-rays
* Radiation therapy

Infections:
* Cytomegalovirus
* Herpes virus
* Parvovirus B19
* Rubella virus (German measles)
* Syphilis
* Toxoplasmosis An easy way to remember maternal infections is TORCH: Toxoplasmosis, Other agents, Rubella, CMV and HSV.

Metabolic imbalance:
* Alcoholism

Diabetes
* Folic acid deficiency
* Iodine deficiency
* Hyperthermia

98. Half life of albumin is:

a) 5 days

b) 10 days

c) 20 days

d) 40 days

Correct Answer - C
Ans. C: 20 days
Albumin has a serum half-life of approximately 20 days. It has a molecular mass of 67 kDa.
Albumin is synthesized in the liver as preproalbumin which has an N-terminal peptide that is removed before the nascent protein is released from the rough endoplasmic reticulum.
The product, proalbumin, is in turn cleaved in the Golgi vesicles to produce the secreted albumin.
Human serum albumin is the most abundant protein in human blood plasma.
It is produced in the liver.
Albumin comprises about half of the blood serum protein. It is soluble and monomeric.

99. Which of the following is an ionic channel ?

a) α -1 receptors

b) β - 1 receptors

c) Nicotinic cholinergic receptors

d) Muscarinic cholinergic receptors

Correct Answer - C
Ans. is 'c' i.e., Nicotinic cholinergic receptors

100. Dose-response curve in Hormesis ?

a) Straight line

b) Sigmoid

c) Inverted U or J shaped

d) Hyperbola

Correct Answer - C
Ans. is 'c' i.e., Inverted U or J shaped
Hormesis is a dose response phenomenon in which low doses have stimulatory effect while high doses have inhibitory effect.
The dose response curve may be *J-shaped* or *inverted U shapted,* the latter being observed, for example, with the effect of chemotactic peptides on neutrophil adhesion.

101. Most effective agent to prevent motion sickness is?

a) Ephedrine

b) Nedocromil

c) Cyproheptidine

d) Hyoscine

Correct Answer - D
Ans. is `d' i.e., Hyoscine
Motion sickness is more easily prevented than cured.
Transdermal hyoscine (scopolamine) is the best agent for the prevention of /notion sickness.
Antihistamines can also be used for prevention.

102. Agent used for treatment of heparin induced thrombocytopenia ?

a) Lepirudin

b) Abciximab

c) Warfarin

d) Alteplase

Correct Answer - A

Ans. is 'a' i.e., Lepirudin

Heparin induced thrombocytopenia (HIT)

- Heparin induced thrombocytopenia is an important adverse effect of heparin administration, usually caused by unfractionated heparin, but may also be seen with the use of low molecular weight heparin (LMWH).
- **HIT may be of two types :**

1. Type 1 (Non-immune mediated) :- It is mild and heparin may be continued.
2. Type 2 (Immune mediated) :- It is due to formation of antibodies against platelets. Paradoxical thrombosis can occur. Heparin must be discontinued immediately. *Warfarin and LMW are contraindicated. Lepirudin* (a direct thrombin inhibitor) *is* anticoagulant of choice. Alternatives are *danaparoid, hirudin* and *Argatroban.*

103. Most commonly used cholinesterase regenerator at NM junction is ?

a) Pralidoxime

b) Obidxime

c) Diacetyl monoxime

d) Edrophonium

Correct Answer - A

Ans. is 'a' i.e., Pralidoxime

Pralidoxime is most commonly used cholinesterase reactivater.

OXIMES

- *Oximes Pralidoxime 2-PAM, obidoxime and diacetyl-monoxime (DAM)] are used in organophosphate poisoning.* o *Oximes acts by reactivating cholinesterase enzyme.*
- Mechanism of action
- In organophosphate poisoning esteratic site of cholinesterase is phosphorylated and anionic site is free.
- Phosphorylated cholinesterase reacts very slowly with water.
- However, if more reactive OH groups in the form of oximes are provided, reactivation occurs more than a million time faster.
- Oximes attach to anionic site and provide more reactive OH groups.
- *Oximes are ineffective in Carbamates poisoning.*
- Pralidoxime is contraindicated in carbamates poisoning, because not only it does not reactivate carbamylated enzyme, it has weak anti-chE activity of its own.

Remember

- Obidoxime is more potent than pralidoxime.
- Pralidoxime and obidoxime are lipid insoluble, *while diacetyl-monoxime (DAM) is lipid soluble so it can cross BBB and regenerate*

AChE in brain.

- *Atropine is used in both organophosphate and carbamate anticholinesterase poisoning.*

104. Maximum sterilising action is shown by which anti TB drug ?

a) Rifampicin

b) INH

c) Pyrazinamide

d) Streptomycin

Correct Answer - A

Ans. is 'a' i.e., Rifampicin

There are three main properties of antitubercular drugs :-

i. *Bactericidal activity (tuberculocidal activity).*
i. *Sterilizing activity.*
i. *Ability to prevent resistance*

Bactericidal activity

- Isoniazid and rifampicin are the most powerful bactericidal drugs, active against all populations of TB bacilli. Pyrazinamide and streptomycin are also bactericidal against certain populations of TB bacilli.

Sterilizing activity

- *Sterilizing acitivity is the ability to kill all the bacilli in lesions as rapidly as possible.*
- *Rifampicin is the most potent sterilizing antitubercular drug.* Pyrazinamide is also having sterilizing action.

To prevent resistance

- Ethambutol and thioacetazone are used in association with more powerful drugs to prevent emergence of resistance.

105. Cyclic peptide chain is present in ?

a) Gramicidin A

b) Gramicidin B

c) Gramicidin D

d) Gramicidin S

Correct Answer - D
Ans. is d i.e., Gramicidin S
<u>Gramicidin</u>
Gramicidin is a heterogeneous mixture of three antibiotic compounds, gramicidins A, B and C, making up 80%, 6%, and 14%, respectively,all of which are obtained from the soil bacterial species Bacillus brevis and called collectively gramicidin D.
Gramicidin D contains linear pentadecapeptides, that is chains made up of 15 amino acid.
This is in contrast to gramicidin S, which is a cyclic peptide chain.
Gramicidin is active against Gram-positive bacteria, except for the Gram-positive bacilli, and against select Gram-negative organisms, such as Neisseriabacteria. Its therapeutic use is limited to topical application, as it induces hemolysis in lower concentrations than bacteria cell death, so it cannot be administered internally.

106. Neuropsychiatry symptoms are seen with which anti TB drug ?

a) INH

b) Rifampicin

c) Pyrazinamide

d) Streptomycin

Correct Answer - A
Ans. is 'a' i.e., INH
Adverse effects of INH

- *Peripheral neuritis (most common), hepatitis, optic neuritis &* atrophy, seizure, ataxia, muscle twitching, toxic encephalopathy, *psychoses,* rashes, fever, arthralgia, acne, *lupus like syndrome, hemolytic anemia in G6PD deficiency.*

Note: *Most common antitubercular drug which is implicated in causing peripheral neuropathy is INH.*

107. Maintainence dose is calculated by using value of?

a) Clearance

b) Volume of distribution

c) Oral bioavailability

d) Daily dosage

Correct Answer - A
Ans. is 'a' i.e., Clearance
Drug dosing

- For drugs with *longer t1/2* a dose that is sufficient to attain the target concentration after single administration, if repeated will accumulate according to plateau principal and produce toxicity later on.
- On the other hand, if the dosing is such as to attain target level at steady state, the therapeutic effect will be delayed by about 5 half lives and this lapse of time may be undesirable some time.
- Such drugs are often administered by initial *loading dose* and subsequent *maintenance doses.*
- Loading dose

108. Anticancer drug with disulfuram like action -

a) Procarbazine

b) Nitrosurea

c) 5 FU

d) Methotrexate

Correct Answer - A

Ans. is 'a' i.e., Procarbazine

Disulfiram like reaction

- Certain drugs when taken concurrently with alcohol produce *disulfiram like actions.*
- That means these drugs produce similar distressing symptoms as disulfiram, when taken with alcohol → flushing, burning sensation, throbbing headache, prespiration, unesasiness, tightness in chest, vomiting, dizziness, visual disturbances, mental confusion, postural fainting and circulatory collapse.

The drugs causing Disulfiram like actions

i. *Chlorpropramide*
i. *Animal charcol*
i. *Cephalosporins (Cefoperazone, moxalactam, cefamandole)*
*. *Griseofulvin*
*. *Metronidazole*
i. *Procarbazine*
i. *Citrated calcium carbamide*
i. *Tinidazine*
*. *Cynamide*

109. CB 1 antagonist used in smoking cessation is ?

a) Naloxona

b) Rimonabant

c) Vareniloline

d) Bupripion

Correct Answer - B
Ans. is 'b' i.e., Rimonabant
Rimonabant

- A selective cannabinoid receptor-1 (CB-1) antagonist which is being tried as antismoking and antiobesity drug.

110. IV diazepam has which of the following effect which is not seen by other routes ?

a) Analgesia

b) Sedation

c) Hypotension

d) Coronary dilatation

Correct Answer - D

Ans. is 'd' i.e., Coronary dilatation

Mechanism of action of benzodiazepines (BZDs)

- Benzodiazepines act preferentially on *midbrain ascending reticular formation* (which maintains wakefulness) and on *limbic system* (thought and mental function).
- Muscle relaxation is produced by action on *medulla.*
- Ataxia is due to action on *cerebellum.*
- BZDs acts on *$GABA_A$ receptors.*
- $GABA_{,,}$ receptor has 5 subunits a / p, p, a / y.
- GABA binding site is on p. subunit, while BZDs binding site is on a / y subunit.
- BZDs receptor increase the conductance of Cl- channel.
- BZDs do not themselves increase Cl- conductance, i.e. they have only GABA facilitatory but no GABA mimetic action. (Barbiturates have both GABA facilitatory and GABA mimetic actions).

Effect on CNS

- In contrast to barbiturates, BZDs are not general depressant, but exert relatively selective *anxiolytic, hypnotic, muscle relaxant* and *anticonvulsant effects.*

- *The antianxiety action of BZDs is not dependent on their sedative property —› with chronic administration relief of anxiety is maintained, but drowsiness wanes off due to development of tolerance.*
- Stage 2 sleep is increased, while REM, Stage 3 & 4 sleep are decreased.
- *Nitrazepam is the only benzodiazepine, which increases REM sleep.*
- *Clonazepan and diazepam have more marked muscle relaxant property.*
- *Clonazepam, diazepam, nitrazepam and flurazepam have more prominent anticonvulsant activity than other BZDs.*
- *Diazepam (but not other BZDs) has analgesic action.*
- *Diazepam produces short lasting coronary dilatation on i.v. injection.*
- Diazepam decreases nocturnal gastric secretion and prevents stress ulcers.

111. Bromocriptine is used in following clinical situations except ?

a) Type II DM

b) Hepatic Coma

c) Cyclical mastalgia

d) Hypoprolactinemia

Correct Answer - D

Ans. is `d' i.e., Hypoprolactinemia

Uses of Bromocriptive

- Bromocriptine is a powerful *dopamine agonist.* It *suppresses prolactin secretion* while promoting secretion of gonadotropins.
- **Its therapeutic uses are:**

i. *Suppression of lactation in galactorrhea*
i. *Cyclical mastalgia*
i. *Induction of ovulation in anovulatory infertility caused by hyperprolactinemia*
*. *Parkinsonism*
*. *Acromegaly due to small pitutary tumours*
i. *Hepatic coma*
i. Recently, *it has been approved for treatment of type 2 DM.*

112. Following is true about GnRH agonists except ?

a) Used in cases of precocious puberty

b) They have action similar to gonadotropin releasing hormone

c) Long acting preparations can be used as nasal spray

d) Ganirelix is the most potent agent

Correct Answer - D

Ans. is 'd' i.e., Ganirelix is the most potent agent

GnRH agonists

- Long acting GnRH (LHRH) agonists causes reversible pharmacological orchiectomy (medical castration) and are used for precocious puberty, prostatic carcinoma, endometriosis, premenopausal breast cancer, uterine leiomyoma, polycystic ovarian disease and to assist induced ovulation.
- *GnRH agonists have action similar to Gonadotropin releasing hormone, i.e., they increase the secretion of gonadotropins (FSH, LH).*
- *Then how do they suppress gonadol function ? Lets see.*
- GnRH agonists increases Gn secretion.
- But after 1-2 weeks they cause desensitization and down-regulation of FSH/LH receptors. (continous exposure to agonist may cause down regulation of receptors) —> suppression of gonadal function.
- Spermatogenesis/ovulation cease and testosterone/estrogen levels fall to castration level because the action of Gonadotropins (FSH & LH) is not there (these hormones promote gametogenesis and secretion of gonadal hormones).
- Preparation of superactive GnRH analogues are —> *Busereline, Goserelin, Leuprolide, Nafarelin, Triptorelin.*

- Superactive/Long acting GnRH are used as *nasal spray* or SC injection.
- *Cetrorelix, ganirelix* and *abarelix* are GnRh antagonists. These are used subcutanously for the treatment of *uterine fibroid & endoinetriosis* and for controlled ovarian stimulation in *in-vitro fertilization.*
- GnRh agonists as well as GnRh antagonists can cause *hot flushes, loss of libido and osteoporosis* as adverse effects.

113. Female on carbimazole therapy presents with sudden fever, rigors and sore throat. Which is the investigation of choice for this patient?

a) Check blood counts

b) Check C reactive protein

c) Take throat Swab

d) Treat for malaria

Correct Answer - A
Ans. is 'a' i.e., Check blood counts
The most common side effect of carbimazole is maculopapular pruritic rash, while most serious adverse effect is agranulocytosis which is reversible.
Patient in the given question presents with sudden onset fever, rigors and sore throat. Infection of any site which is sudden onset and rapidly progressive in a patient on carbimazole therapy the suspicion should be development of agranulocytosis, so it is essential to do blood counts.

114. Selective beta 2 blocker is ?

a) Butoxamine

b) Betoxolol

c) Esmolol

d) Bisoprolol

Correct Answer - A
Ans. is 'a' i.e., Butoxamine

115. Beta blocker with membrane stabilizing property are all except ?

a) Acebutolol

b) Betaxolol

c) Carvedilol

d) Bevantolol

Correct Answer - D
Ans. is 'd' i.e., Bevantolol

116. Longest acting beta blokeris ?

a) Nodalol

b) Esmolol

c) Carvedilol

d) Acebnolol

Correct Answer - A
Ans. is 'a' i.e., Nodalol
Nodalol is longest acting β-blocker.
Esmolol is shortest acting β-blocker.
Remember

- *Nodalol is longest acting P-blocker.*
- *Esmolol is shortest acting n-blocker*
- Acebutolol possesses all activities i.e., cardioselectivity, partial agonist activity, membrane stablizing activity and lipid insolubility.
- Beta blockers approved for treatment of CHF : Carvedilol (most widely used), metaprolol, bisoprolol.
- Carvedilol is a $13_{/}$ + 132 + a_{l} adrenoreceptor blocker with a : i3 blocking property of l : 9. It produces
- peripheral vasodilatation due to a-1 blockade as well as calcium channel blockade (direct effect).
- Atenolol, sotalol and nodalol are primarily excreted by kidney → should not be given in renal failure.
- *Sotalol, penbutolol and pindolol have almost 100% bioavailibility.*
- *Penbutolol has maximum oral absorption.*
- *Carvedilol has maximum plasma protein binding.*
- *Celiprolol has minimum plasma protein binding.*

117. Bevacizumab is used in ?

a) Carcinoma colon

b) Liver carcinoma

c) Renal cell carcinoma

d) Pancreatic carcinoma

Correct Answer - A
Ans. is 'a' i.e., Carcinoma colon

118. Cabergoline is used in -

a) Acromegaly

b) Hyperprolactinoma

c) Both a and b

d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Both a and b

- *Prolactin is physiologically involved in lactation.* In a breast which has been primed by female hormones (estrogen and progesteron), prolactin induces and maintains lactation by stimulating synthesis of milk. **Prolactin is the only pituitary hormone which is primarily under the inhibitory control of hypothalamus. Its secretion is inhibited by dopamine (prolactin inhibiting substance) through D_2 receptors.** Therefore, dopamine agonists inhibit prolactin release, and D, antagonists (antipsychotics, metoclopromide) cause hyperprolactinemia.
- o **Bromocripitine,** a *synthetic ergot,* **is a potent dopamine agonist with greater action on D_2 receptors. On Di receptors** it acts as partial agonist or antagonist. It also has a weak **a-adrenergic blocking action.** Bromocriptine **decreases** (i) **Prolactin secretion,** (ii) **GI motility,** and (iii) GH secretion in acromegaly. It stimulates CTZ to cause nausea and vomiting. It is used in **hyperprolactinemia, suppression of lactation in galactorrhea,** cyclic mastalgia, parkinsonism, **acromegaly,** hepatic coma, and type 2 DM (recently approved).
- **Cabergoline** is another **D_2** agonist, which is more potent and longer acting than bromocriptine. It is preferred **for** *acromegaly and*

hyperprolactinemia. **Quinagolide,** other D, agonist, its effective for hyperprolactinemia.

119. Flu like syptoms is side effect of which anti TB drug ?

a) NH

b) Rifampicin

c) Pyrzinamide

d) Streptomycin

Correct Answer - B
Ans. is 'b' i.e., Rifampicin

120. Which of the following SSRI is a prodrug?

a) Fluoxetine

b) Paroxetine

c) Citalopram

d) Fluvoxamine

Correct Answer - A

Ans. is 'a' i.e., Fluoxetine

Selective serotonin reuptake inhibitors (SSRI)

- **5-HT (serotonine) is the major player in depressive illness** and serotonergic pathways are closely related to mood disorders especially depression.
- Thus, drugs affecting the 5-HT levels in the neural synapse and serotonergic pathways are effective in the treatment of depression.
- Therefore, the **SSRIs** have been shown to alleviate depression and are the **most commonly used drugs in the therapy of depression.**
- These drugs act by inhibiting reuptake of 5-HT.
- These drugs are now *1st choice for depression.*
- Advantages over TCAs.

  1.Little or no sedation, no weight gain.
  2.No interference with psychomotor or cognitive function.
  3.No anticholinergic side effects.
  4.No postural hypotension (no action of a-adrenergic receptors).
  5.No propensity to cause seizures or arrythmias.

121. Tamoxifene ?

a) SSRI

b) SERM

c) SNRI

d) DNRI

Correct Answer - B
Ans. is `b' i.e., SERM
Tamoxifen is a selective estrogen receptor modulator (SERM).

122. Letrozole belongs to which group?

a) SERM

b) SERD

c) LHRH analogues

d) Aromatse inhibitors

Correct Answer - D
Ans. is 'd' i.e., Aromatase inhibitors
Aromatase inhibitors

- Aromatase inhibitors are drugs which inhibit the enzyme Aromatase.
- Aromatase is an enzyme responsible for the conversion of testosterone (androgens) to estrogens.
- This conversion of androgens to estrogens occur in several tissues including ovary, adrenal cortex, peripheral tissues.
- Inhibition of Aromatase leads to decrease in estrogen level.
- Aromatase inhibitors prevent the conversion of androgens to estrogens only in postmenopausal women, not in premenopausal women.
- In *premenopausal women, as the level of estrogens decrease it activates the pituitary hypothalamic axis.* Activation of pituitary hypothalamic axis *leads to increased secretion of pituitary gonadotropins.* The pituitary gonadotropins *inturn increase the secretion of estrogens.* Thus the estrogen level returns back to their normal level.
- On the other hand aromatase inhibitors effectively decrease the secretion of estrogen in postmenopausal women.
- In postmenopausal women, the production of estrogen from androgens occurs, only in extraovarian sites such as peripheral tissues where the conversion of androgens to estrogens is blocked

by aromatase inhibitors.

- Use of aromatase inhibitors
- Aromatase inhibitors are used in the t/t of Hormone receptor positive breast carcinomas in postmenopausal women. They are not effective in premenopausal women.
- *How are Aromatase inhibitors useful in Breast carcinomas ?*
- In breast carcinomas, estrogen delivers growth signals to the hormone receptors. The hormone receptors upon receiving the growth signals, cause the proliferation of tumor cells.
- After the inhibition by aromatase inhibitors, estrogen level decreases, this leads to lesser delivery of growth signals and in turn lesser proliferation of tumor cells.
- Aromatase inhibitors are of two types :
- Type I (steroidal) aromatase inhibitor - They cause irreversible inhibition of aromatase, e.g. Exmestane, formestane.
- Type II (non-steroidal) aromatase inhibitor - They cause reversible inhibition of aromatase e.g. Anastrazole, Letrozole, vorozale.
- Above classification is based on chemical structure (steroidal or non-steroidal) and type of inhibition (reversible or irreversible). Based on the evolution the aromatase inibitors arc:

i. First generation → Aminoglotethimide
i. Second generation → Steroidal type I (Example, formestane), non-steroidal type II (Anastrazole, Letrozole, Vorozole, fadrozole)

- Side effects - Hot flushes, nausea, diarrhoea, dyspepsia, thinning of hair and *Joint Pain (Arthralgia) and increased risk of fracture.*
- There is no endometrial proliferation (no risk of endometrial carcinoma), no risk of venous thromboembolism and no deterioration of lipid profile.

Remember

- Anastrozole and letrozole are nonsteroidol compound, while exemestane is steroidol. o Exemestane also has weak androgenic activity.
- Anastrozole is more potent than letrozole.
- First generation aromatase inhibitors → Aminoglutethimide.
- Second generation aromatase inhibitors → Letrozole, anastrozole, fadrozole and exemestone.

123. TADALAFIL false is ?

a) It is longest acting phosphodiesterase inhibitor

b) It cannot be used for the treatment of PAH

c) It is used in erectile dysfunction

d) Its half life is 17-5 hours

Correct Answer - B

Ans. is 'b' i.e., It cannot be used for the treatment of PAH

1. Tadalafil is the longest acting phosphodiesterase inhibitor used for erectile dysfunction.
2. Its half life is 17·5 hours.
3. It can be used as once-daily phosphodiesterase type 5 (PDE5) inhibitor for the treatment of pulmonary arterial hypertension (PAH).

124. Amphetamine causes which of the following ?

a) IUGR

b) Cardiac anamoly

c) Cleft lip

d) All the above

Correct Answer - D

Ans. is 'd' i.e., All the above

Following are the fetal or neonatal effects of amphetamines :

- IUGR
- Abruptio placentae
- Glassy eyed look
- Prematurity
- Hypoglycemia
- Lethargy
- Cardiac anamolies
- Sweating
- Feeding problems
- Cleft palate
- Poor visual tracing

125. Which of the following drugs is contraindicated in liver dysfunction?

a) Pefloxacin

b) Vancomycin

c) Amikacin

d) Hydralazine

Correct Answer - A
Ans. is 'a' i.e., Pefloxacin

126. Bevacizumab is ?

a) Anti VEGF antibody

b) Histone decyclase inhibitor

c) Proteosome inhibitor

d) Her2 neu inhibitor

Correct Answer - A
Ans. is 'a' i.e., Anti VEGF antibody

127. Irreversible hearing loss caused by ?

a) Gentamycin

b) Clarithromycin

c) Both of the above

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Gentamycin

- Gentamycin is the most commonly used of the aminoglycosides. It produces vestibular toxicity and irreversible hearing loss.
- Clarithromycin is known to produce reversible hearing loss.

128. Mechanism of action of colchicine is ?

a) Inhibits gouty inflammation

b) Inhbits the release of chemotactic factors

c) Inhibits granulocyte migration

d) All the above

Correct Answer - D

Ans. is 'd' i.e., All the above

Colchicine

- It is neither analgesic nor anti inflammatory.
- It specifically inhibits gouty inflammation.
- It is inhibits release of chemoattractant molecules.
- It inhibits granulocyte migration into the joint.
- It is antimitotic causes metaphase arrest by binding to microtubules.
- It increases gut motility.

129. Drug used in treatment of migraine ?

a) 5HT1 agonist

b) 5HT1 antagonist

c) Dl agonist

d) D1 antagonist

Correct Answer - A
Ans. is 'a' i.e., 5HT1 agonist

130. Drug of choice for MRSA infection ?

a) Ciprofloxacin

b) Oxacillin

c) Vancomycin

d) Clindamycin

Correct Answer - C
Ans. is 'c' i.e., Vancomycin
Methicillin resistance staphylococcus aureus (MRSA)

- MRSA is a bacterium responsible for several difficult-to-treat infections in humans.
- It may also be referred to as *multi-drug resistant staphylococcus aureus or oxacillin resistant staphylococcus aureus (ORSA).*
- MRSA is *by definition any strain of staphylococcus aureus that is resistant to a 13-lactams including penicillin, methicillin, cloxacillin, nafcillin, oxacillin and cephalosporins.*
- *Resistance develops due to alteration in transpeptidase (penicillin binding protein) on which all* 13-lactam *antibiotic act : so, MRSA is resistant to all 0-lactam antibiotics.*
- *MRSA (especially community acquired MRSA; CA-MRSA) display enhanced virulence, spreading more rapidly and causing disease much more severe than traditional staphylococcus aureus.*

131. Hypolipidemic drugs act on all except ?

a) HMG Co A reductase

b) Lipoprotein lipase

c) Acyl CoA, cholesterol acyl transferase 1

d) Peripheral decarboxylase

Correct Answer - D

Ans. is 'd' i.e., Peripheral decarboxylase

Hypolipidemic drugs

1. HMG-CoA reductase inhibitors (statins) - Lovastatin, Simvastatin, Pravastatin, Atorvastatin, Rosuvastatin.
2. Bile acid sequestrants (Resins) - cholestyramine, colestipol.
3. Activate lipoprotein lipase (fibric acid derivatives) - clofibrate, gemfibrozil, bezafibrate, fenofibrate.
4. Inhibit lipolysis and triglyceride synthesis - Nicotinic acid.
5. Other - Probucol, Gugulipid, Ezetimibe, Avasimibe, Torcetrapib.

- *Ezetimibe* inhibits intestinal cholesterole absorption.
- *Avasimibe* inhibits enzyme *acyl Coenzyme A : cholesterol acyl transferase-1 (ACAT-1)* which causes esterification of cholesterol.
- *Torcetrapib* inhibits *cholesterol ester triglyceride transport protein* → T HDL cholesterol.

132. Following are the side effects of fenfluramine except ?

a) Pulmonary hypertension

b) Valvular defects

c) Sudden deaths

d) Dizziness

Correct Answer - D

Ans. is 'd' i.e., Dizziness

Fenfluramine and Dexfenfluramine

- They reduce the food seeking behavior by enhancing the serotonergic transmission in the hypothalamus.
- They were extensively used for slimming
- Tolerance develops to the anorectic action of in 2 - 3 monthsEchocardiographic abnormalities, valvular defects, pulmonary hypertension and sudden deaths are the documented side effects.
- These drugs have been discontinued by USFDA.

133. Cholinergic drug which acts on heart by decrease in levels of cAMP and due to opening of K+ channels is?

a) Methacholine

b) Oxotremorine

c) Bethanechol

d) DMPP

Correct Answer - A
Ans. 'a' i.e., Methocholine

134. Pramlintide is ?

a) Synthetic amylin analogue

b) Inhibitor of DPP 4

c) GLP 1 analogue

d) PPAR gamma

Correct Answer - A

Ans. is 'a' i.e., Synthetic amylin analogue

NEWER ANTIDIABETIC DRUGS

Exenatide

- *Exenatide is a synthetic glucagon-like peptide - 1 (GLP-1) analogue.*
- GLP-1 is an important incretin that is released from gut in response to oral glucose.
- But GLP-1 can not be used clinically as it is degraded rapidly by enzyme *dipeptidly peptidase → (DPP-4).*
- Exenatide is resistant to DPP-4.
- It acts similar to GLP-1 → Enhancement of postprandial insulin release, suppression of glucagon release and appetite as well as slowing of gastric emptying.
- *It is given by subcutaneous route & used in type 2 DM*
- *Nausea is most important side effect.*

Sitagliptin

- This is *orally active inhibitor of DPP-4.*
- It prevents degradation of endogenous GLP-1 and other incretins, potentiating their action, resulting in limitation of postprandial hyperglycemia.
- It is used in *type 2 DM.*
- Other DPP-4 inhibitor is vildagliptin

Pramlintide

- This is a *synthetic amylin analogue* (Amylin is a polypeptide produced by pancreatic (3-cells which reduces glucagon secretion from a-cells and delays gastric emptying).
- Pramlintide attenuates postprandial hyperglycemia and exerts a centrally mediate anorectic action. o It is given by subcutaneous route and is used in *both Type 1 and Type 2 DM.*

Glucomannan

- This is powdered extract from tuber of konjar.
- It is promoted as a dietary adjunct for diabetes.
- It swells in stomach by absorbing water and is claimed to reduce appetite, blood sugar, serum lipids and relieve constipation.

Bromocriptine

- Recently bromocriptine has been approved by FDA, as an adjunct to diet and exercise to improve glycemic control in type 2 DM. It has been found that dopamine alter insulin resistance by acting on hypothalmus and bromocriptine blocks O_2 receptors.

135. Mannitol is not useful for ?

a) Glaucoma

b) Raised ICT

c) Impending renal failure

d) Pulmonary edema

Correct Answer - D

Ans. is 'd' i.e., Pulmonary edema

Mannitol

- It is a nonelectrolyte of low molecular weight that is *pharmacologically inert.*
- It *raises osmolarity of plasma* and tubular fluid.
- Mannitol decreases tubular water and electrolyte reabsorption by ?

1. Due to osmotic effect, fluid is retained in the lumen of PT.
2. Inhibits transport processes in thick AscL+1 - *most important cause of diuresis.*
3. Expands ECF *(r intravascular volume)* - draws water from the intracellular compartment → increases GFR and *inhibits renin release.*
4. Increases renal blood flow, especially to medulla -3 medullary hypertonicity is reduced → corticomedullary osmotic gradient is dissipated → passive salt reabsortion is reduced.

- *Uses* - Raised IOT (glaucoma), raised ICT, to maintain. GFR and urine flow in impending renal failure, and to counteract low osmolality of plasma/ECF due to rapid hemodialysis.
- *Contraindications* → Acute tubular necrosis (ARF), anuria, pulmonary edema, Acute LVF, cerebral hemorrhage.

136. Which anti TB drug is avoided in HIV patient ?

a) INH

b) Rifampicin

c) Pyrazinamide

d) Streptomycin

Correct Answer - B

Ans. is 'b i.e., Rifampicin

- All HIV-infected TB patients are candidates for ART, and the optimal timing for its initiation is as soon as possible and within the first 8 weeks of anti-TB therapy.
- Rifampin, a potent inducer of enzymes of the cytochrome P450 system, lowers serum levels of many HIV protease inhibitors and some non- nucleoside reverse transcriptase inhibitors-essential drugs used in ART.
- In such cases, rifabutin, which has much less enzyme- inducing activity, has been recommended in place of rifampin. However, dosage adjustment for rifabutin and/or the antiret- roviral drugs may be necessary.

137. Vit K is available as all except ?

a) Menoquinone

b) Menadione

c) Phytonadione

d) Phytoquinone

Correct Answer - D

Ans. is 'd' i.e., Phytoquinone

Vitamin-K

- It is a fat soluble vitamin.
- It is the major coagulant of human body (coagulants are substances which promote coagulation).

  It is of three types ?

  a) K_1 (from plants) - Phytonadione

  b) K_2 (Produced by bacteria) - Menaquinones

  C) K3 (Synthetic) - Menadione
- *Half life of vit K is 72 hours* - Mahenderbhan Singh 5^{th}/e - 348
- *lit K acts as a cofactor at a late stage in the synthasis of coagulation factors by liver - Prothrombin (factor II), Factor VII, IX and X (also protein 'C' & Protein '8").*
- It catalyzes the final step in activation of these factors i.e. *gamma carboxylation of glutamate residues* which confers on them the capacity to bind Ca^{+2} and to get bound to phospholipids surfaces - properties essential for participation in the coagulation cascade.

138. Which of the following anticancer drugs are competitive inhibitors of tyrosine kinase ?

a) Imatinib and sunitinib

b) Letrozole

c) Bicalutamide

d) Fulvestrant

Correct Answer - A

Ans. is 'a' i.e., Imatinib and sunitinib

Molecular targeted agents

- *Tyrosine kinase inhibitors*
- *Competitive inhibitors* → Imatinib, Nilotinib, Sunitinib, Dasatinib, Erlotinib, Gefitinib, Lapatinib, Sorafenib (Remember all end with ' *nib').*
- *Monoclonal antibodies* → Cetuximab, panitumumab.
- *HER_2/neu (ERB B_2) inhibitors* Monoclonal antibody - Trastuzumab.
- *Targeted antibody* → Gemtuzumab (anti CD-33), Rituximab (anti - CD20), Alemtuzumab (anti CD-52).
- *Vascular endothelial growth factor (VEGF) inhibitor* → Monoclonal antibody - Bevacizumab.
- *Proteosome inhibitors* → Bortezomib.
- *Histone deacetylase inhibitor* → Vorinostat
- *DNA - methyltransferase inhibitor* → 5-azacytidine, 2-deoxy-5 azacytidine.
- *All - trans-retinoic acid.*
- *Biological response modifier* - Recombinant IL-2 (aldesleukin, denileukin).

139. Thalidomide is used in ?

a) Mutilple myeloma

b) Squamous cell carcinoma

c) Basal cell carcinoma

d) Masopharyngeal carcinoma

Correct Answer - A
Ans. is 'a' i.e., Multiple myeloma
Clinical uses of thalidomide

- AIDS related aphthous ulcers
- AIDS related wasting syndrome
- Multiple myeloma and other solid tumours
- Prevention of graft versus host disease after transplantation
- Rheumatoid arthritis
- Ankylosing spondylitis
- Crohn's disease and Bechet's syndrome
- Erythema Nodusum Leprosum

140. Which drug prevent peripheral conversion of T_4 to T_3 -

a) Propylthiouracil

b) Propranolol

c) Iodides

d) a and b both

Correct Answer - D
Ans. is 'a' i.e., Propylthiouracil & 'b' i.e., Propranolol

141. Daclizumab acts through ?

a) cGMP activation

b) Adenylcyclase inhibition

c) IL 2 receptor blocker

d) IL10 receptor blocker

Correct Answer - C
Ans. is 'c' i.e., IL 2 receptor blocker

- Monoclonal antibodies (daclizumab and basiliximab) that block the interleukin 2 receptor and are used in prevention of graft rejection as immunosuppresant.

142. 1, 25 dihydrocholecalciferol acts on ?

a) Surface receptors

b) Cytosolic receptors

c) Intranuclear receptors

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Intranuclear receptors

143. Following is false about aripiprazole except ?

a) Only antipsychotic with D1 agonistic activity

b) It has 5HT1A antagonistic action

c) It has maximum sedating potential

d) It is the drug of choice in treatment of acute mania

Correct Answer - D

Ans. is `d' i.e., It is the drug of choice in treatment of acute mania

Atypical antipsychotics —> Olanzapine, risperidone, aripiprazole or quetiapine with or without benzodiazepine is the treatment of choice for acute mania.

Aripiprazole

Only antipsychotic with D_2 *agonistic activity. (all others are* D_2 *antagonists).*

Longest acting

It also has $5HT_{,A}$ agonistic and $5HT_2$ antagonistic activity - Also known as *dopamine-serotinine stabilizer.*

It is least sedating antipsychotic → can cause insomnia.

144. Mechanism of action of actinomycin D is ?

a) Inhibits DNA dependent RNA synthesis

b) Activates DNA dependent RNA synthesis

c) Inhibits RNA dependent DNA synthesis

d) Activates RNA dependent DNA synthesis

Correct Answer - A

Ans. is 'a' i.e., Inhibits DNA dependent RNA synthesis

The anticancer antibiotics are

- Actinomycin - D (Dactinomycin)
- Daunorubicin (Rubidomycin)
- Mitomycin C
- Doxorubicin
- Mitoxantrone
- Mithramycin (plicamycin)
- Bleomycins
- These anticancer, antibiotics obtained from micro-organisms and have prominent antitumour activity.
- Mechanism of action : They are intercalated between DNA strands and interfere with its template function.
- Actinomycin `D' inhibits DNA dependent RNA synthesis.
- Bleomycin cause DNA breakage and free radical formation .
- Doxo-and daunorubicin inhibit Topoisomerase I & II.
- Mitomycin acts like alkylating agents.
- Mitoxantrane binds to DNA to produce strand breakage and inhibits both DNA & RNA synthesis.

Remember

- *All antitumor antibiotics are cell cycle nonspecific except for*

bleomycin which acts in ***G_2*** *phase.*

145. Neostigmine is used in the following except ?

a) Myasthenia gravis

b) Cobra bite

c) Atony of bladder

d) Glaucoma

Correct Answer - D
Ans. is 'd' i.e., Glaucoma

146. Xenobiotics are metabolized to ?

a) Increase water solubility

b) Increase lipid solubility

c) Make them nonpolar

d) None of the above

Correct Answer - A

Ans. is 'a' i.e., Increase water solubility

BIOTRANSFORMATION (METABOLISM)

- Most of the drugs are treated by the body as foreign substances (xenobiotics).
- Like other foreign substances (xenobiotics), body tries to eliminate drugs by various mechanisms for ridding itself of chemical intruders.
- *Biotransformation means chemical alteration of the drug in the body.*

Why drug transformation is necessary ?

- Kidney plays a pivotal role in terminating the activity of drugs.
- For renal excretion the drug tends to be polar (lipid insoluble/water soluble) so that it can not diffuse back from tubular lumen and can be excreted.
- But pharmacologically active organic molecules (drugs) tend to be lipophlic (nonpolar) and remains unionized or only partially ionized at physiological pH.
- Biotransformation is needed to render nonpolar (lipid soluble) compounds polar (water soluble) so that they are not reabsorbed in the renal tubules and are excreted.

Sites and processes of biotransformation

- *Primary site of drug metabolism is liver,* others are - kidney, intestine, lung and plasma.

Biotransformation of drugs may lead to :-

Active metabolite from an active drug

- Many drugs are partially converted to one or more active metabolites.
- The effects observed are the sumtotal of that due to the parent drug and its active metabolite.

Activation of inactive drugs

- Few drugs are inactive as such and need conversion in the body to one or more active metabolites.
- Such a drug is called *prodrug.*

147. Dose of centchroman is ?

a) 30 mg

b) 60 mg

c) 120 mg

d) 240 mg

Correct Answer - A

Ans. is 'a' i.e., 30 mg

Cetchroman (Saheli)

- Ormeloxifene, research product of Central Drug Research Institute, Lucknow, India.
- It is a potent non - steroidal compound with potent anti - estrogenic and weak estrogenic properties. It is taken orally (30 mg) twice a week for first three months then once a week.
- It works primarily by preventing implantation of fertilized ovum. It does not inhibit ovulation.
- It is avoided in PCOD, with liver and kidney diseases and in tuberculosis. There may be a tendency of oligomenorrhoea.
- The failure rate is 1 - 4/100 woman years of use. Failure rate is less with increased doses. It is devoid of any significant adverse metabolic effect.
- This may also be used as a emergency contraceptive.

148. Pharmacoviglance is used for ?

a) To monitor drug toxicity

b) To monitor unauthorized drug manufacture

c) Monitoring of students

d) Check costs

Correct Answer - A
Ans. is 'a' i.e., To monitor drug toxicity
Pharmacovigilance
Pharmacovigilance is the science and activities relating to detection, assessment, understanding and prevention of adverse effects or any other drug related problem.

149. Branch that deals with medicinal drugs obtained from plants and other natural resources -

a) Pharmacognosy

b) Pharmacogenetics

c) Pharmacogenomics

d) Pharmacopia

Correct Answer - A

Ans. is 'a' i.e., Pharmacognosy

- Pharmacognosy : It is the branch the deals with the knowledge pertaining to the medicinal drugs obtained from plants and other natural sources.
- Pharmacogenetics : Study of genetic basis for variability in drug response
- Pharmacogenomics : Use of genetic information to guide the choice of drug and dose on an individual basis.

150. Drugs causing peptic ulcer are all except ?

a) Clopidogrel

b) NSAID

c) Mycophenolate mofetil

d) Propylthiouracil

Correct Answer - D
Ans. is 'd' i.e., Propylthiouracil
Drug/Toxin causing peptic ulcer disease:
Bisphosphonates
Chemotherapy
Clopidogrel
Crack cocaine
Glucocorticoids (when combined with NSAIDs)
Mycophenolate mofetil
Potassium chloride

151. Which is the antidepressant with no anticholinergic effects?

a) Imipramine

b) Mianserine

c) Fluoxamine

d) Amitryptiline

Correct Answer - C

Ans. is 'c' i.e., Fluoxamine

Antidepressants with no anticholinergic (antimuscarinic) action.

- Bupropion
- Escitalopram
- Fluvoxamine
- Paroxetine
- Trazodone
- Citalopram
- Duloxetine
- Venlafaxine
- Sertaline
- Mirtazapine Fluoxetine is the only SSRI which has some anticholinergic action.

Remember

Antidepressants with no sedative action

- Bupropion
- Citalopram
- Fluvoxamine
- Protriptyline
- Duloxetine

- Escitalopram
- Venlafaxine

(Note : First 6 drugs are same in both groups)

152. Inverse agonist of benzodiazepine receptor is -

a) Phenobarbitone

b) Flumazenil

c) Beta carboline

d) Gabapentin

Correct Answer - C
Ans. is `c' i.e., Beta carboline

153. Dantrolene acts on ?

a) Raynodine receptor

b) Cannabinoid receptor

c) Both of the above

d) None of the above

Correct Answer - A

Ans. is 'a' i.e., Raynodine receptor

Dantrolene

- Dantrolene is a directly acting skeletal muscle relaxant.
- Mechanism of action
- Normally excitation (depolarization of end plate) is coupled with contraction by Ca" Excitation contraction coupling.
- Dantrolone acts on *Ryanodine receptors (RyR)* Calcium channels in sarcoplasmic reticulum of skeletal muscles and prevents their depolarization triggered opening → no release of intracellular Ca^{+2} → No excitation contraction coupling → No contraction.
- That means *muscle contraction is uncoupled from depolarization of the membrane.*
- *Dantrolene is DOC for malignant hyperthermia.*

It can also be used in

.. Neuroleptic malignant syndrome.

2. To reduce spasticity in UMN disorders, hemiplegia, paraplegia, cerebral palsy and multiple sclerosis.

- *Muscular weakness is the dose limiting side effect.*
- Other side effects are sedation, malaise, light headedness, *troublesome diarrhoea and liver toxicity.* Remember
- *Quinine* also acts as directly acting muscle relaxant.
- It increases refractory period and decreases excitability of motor end

plates.

- It can be used in nocturnal leg cramp.

154. Colistin is obtained from ?

a) Bacteria

b) Fungi

c) Actinmycetes

d) Herbs

Correct Answer - A
Ans. is 'a' i.e., Bacteria
Amongst the given options no drugs is obtained from fungus.
Antibiotics are obtained from -
1. Fungi - Penicilllin, Cephalosporin, Griseofulvin.
2.Bacteria - Polymyxin B, Colistin, Bacitracin, Tyrothricin, aztreonam.
3. Actinomycetes - Aminoglycosides, Tetracyclines, Chloramphenicol, macrolides, Polyenes.

155. Drug not acting on P2y12 receptor is ?

a) Ticlopidine

b) Clopidrogel

c) Dipyridamole

d) Prasugrel

Correct Answer - C
Ans. is 'c' i.e., Dipyridamole

- Dipyridamole: inhibits phosphodiesterase as well as blocks uptake of adenosine to increase platelet cAMP which in turn potentiates PGI2 and interferes with aggregation.
- Ticlopidine, Clopidogrel and prasugrel act on the P2y12 receptor and inhibits ADP as well as fibrinogen induced platelet aggregation.
- **Note:** Prasugrelis the latest most potent and fastest acting P2Y12 purinergic receptor blocker. It is used in acute coronary sydromes and when strong antiplatelet action is required).

156. All release histamine except ?

a) Pancuronium

b) D- TC

c) Succinylcholine

d) Mivacurium

Correct Answer - A
Ans. is 'a' i.e., Pancuronium
Properties of NM Blockers

- *Longest acting Neuromuscular blocker → Pancuronium (duration of action 120-180 minutes). (Goodman &* Gilman 11 th/e p. 222) (Note: In some books pipecuronium or Doxacurium have given as the longer activity).
- *Shortest and fastest acting neuromuscular blocker → Succinylcholine (suxamethonium) - duration of action 5-8 minutes.*
- *Shortest acting competitive (nondepolarizing) neuromuscular blocker → Mivacurium (duration of action 12-18 minutes).*
- *Fastest acting nondepolarizing blocker Rocuronium (can be used for endotracheal intubation as an alternative to Sch).*
- Non-depolarizing neuro-muscular blockers can cause ganglion block, vagal block and Histamine release (different agents has different propensity).
- *Histamine release is caused by → D-TC (maximum tendency), succinylcholine, mivacurium, doxacurium, atracurium, tubocurarine → can cause bronchoconstriction.*
- *Virtually no histamine release → Pancuronium*
- *Vagal block is caused by Pancuronium, recuronium, Gallamine.*
- *Maximal vagal block and tachycardia is caused by → Pancuronium (Previously it was gallamine, but it is not used now).*

- *Vagal stimulation is caused by → succinylcholine (can cause bradycardia).*
- Ganglion block is caused by → d-Tc, Metocurine, Alcuronium.
- *Maximum ganglion blockade is caused by → d-TC.*
- *Ganglion stimulation is caused by → Succinylcholine.*

157. False regarding Cytochrome P 450 is ?

a) They are essential for the production of cholesterols, steroids, prostacyclins and thromboxane A2

b) They absorb light with 45nm wavelength

c) They occur predominantly in liver

d) They are non heme proteins

Correct Answer - D

Ans. is d i.e., They are non heme proteins

CYTOCHROME P450

- They CYP450 are essential for the production of cholesterols, steroids, prostacyclins and thromboxane A2.
- They are also essential for the metabolism of foreign chemicals and detoxification of drugs.
- CYP 450 enzymes are so named because they are bound to membranes within a cell (cyto) and contain a heme pigment (chrome and P) that absorbs light at a wavelength of 450 nm when exposed to carbon monoxide.
- There are more than 50 CYP450 enzymes, but the CYP1A2, CYP2C9, CYP2C19, CYP2D6, CYP3A4, and CYP3A5 enzymes metabolize 90 percent of drugs.

158. Omalizumab is ?

a) Anti IgM antibody

b) AntiIgG antibody

c) Anti IgE antibody

d) Anti IgD antibody

Correct Answer - C
Ans. is 'c' i.e., Anti IgE antibody

159. Nicotinic acid ?

a) Increases HDL

b) Increased triglyceride synthesis

c) Type II hyperlipoproteinemia

d) Decreased hydrolysis of VLDL

Correct Answer - A

Ans. is 'a' i.e., Increases HDL

Nicotinic acid (Niacin)

- There arc three main type of lipases related to metabolism of lipoproteins ?

1. *Lipoprotein lipase* → Present in blood vessels and causes hydrolysis of tryglyceride content of VLDL and chylomicrones.
2. *Hepatic lipase* → Converts IDL to LDL by hydrolysing the triglyceride content of IDL.
3. *Hormone sensitive lipase* → Present intracellularly in peripheral tissue and causes intracellular lipolysis by hydrolysing triglycerides.

- Niacin (Nicotinic acid) inhibits intracellular lipolysis by inhibiting hormone sensitive lipase → intracellular FFA to liver - 4 .1, triglyceride synthesis.
- Niacin also increases the activity of lipoprotein lipase → T hydrolysis of VLDL triglyceride.
- Nicotinic acid also reduces the production of VLDL in liver by inhibiting TG-synthesis → indirectly the VLDL degradation products IDL and LDL are also reduced.
- *Nicotinic acid is the most effective drug to raise HDL-CH.*
- *Increased HDL* is due to interference of direct pathway of HDL cholesterol to liver which involves *apo-*A_i → Niacin decreases apo-A, mediated hepatic clearance.

- Nicotinic acid is used in type I, III, IV & V hyperlipoproteinemias.

160. HIV integrase inhibitor is ?

a) Elvitegravir

b) Abacavir

c) Maraviroc

d) Tenofovir

Correct Answer - A
Ans. is 'a' i.e., Elvitegravir
Integrase inhibitors

- Raltegravir and Elvitegravir act by inhibiting enzyme integrase.

161. Platelet adhesion is inhibited by ?

a) Nitric oxide

b) Substance P

c) Thrombin

d) IL 2

Correct Answer - A
Ans. is 'a' i.e., Nitric Oxide

162. Which of the following is the longest acting oral anticoagulant ?

a) Bishydroxycoumarin

b) Warfarin

c) Acenocoumarol

d) Phenindione

Correct Answer - A
Ans. is 'a' i.e., Bishydroxycoumarin
Bishydroxycoumarin (Dicumarol) is the longest acting oral anticoagulant.
Ethylbiscoumacetate is the shortest acting anticoagulant.

163. Function of M_2 receptor in heart ?

a) SA node hyperpolarisation

b) AV node increased velocity of conduction

c) Increased contractility of ventricles

d) Increased Ach release from cholinergic nerve endings

Correct Answer - A
Ans. is 'a' i.e., SA node hyperpolarization

164. Methysergide is banned as it causes ?

a) Pulmonary fibrosis

b) Pleural effusion

c) Syncope

d) Myocarditis

Correct Answer - A
Ans. is 'a' i.e., Pulmonary fibrosis
Methysergide

- It is chemically related to ergot alkaloids and antagonizes the action of serotonin on smooth muscles including that of blood vessels, withot producing ergot like effects.
- It is a potent 5HT2A/2C antagonist.
- It has been used for migraine prophylaxis, carcinoid and postgastrectomy dumping syndrome.
- *Prolonged use has caused abdominal, pulmonary and endocardial fibrosis,* because of which it has gone into disrepute.

165. Dopamine at 1-2 Microgram/ Kg/ min produces?

a) Renal vasodilatation

b) Positive ionotropic effect

c) Mesenteric vasoconstriction

d) Generalised vasoconstriction

Correct Answer - A

Ans. is 'a' i.e., Renal vasodilatation

Dopamine produces dose-dependent action:

- At *low dose (1-2 µg/kg/min)* causes dilation of renal and mesenteric vessels → often referred to as *renal dose.*
- At *moderately high dose (2-10 µg/kg/min)* produces a positive ionotropic effect by stimulating β_1 receptor on heart → *cardiac dose.*
- At *high doses (> 10 µg/kg/min)* produces vasoconstriction by stimulating α_1 receptors → *vascular dose.*

166. Which of the following is a univalent direct thrombin inhibitor?

a) Argatroban

b) Hirudin

c) Bivalirudin

d) Lepirudin

Correct Answer - A
Ans. is 'a' i.e., Argatroban
Direct thrombin inhibitors (DTIs)

- This is a class of medications that act as anticoagulants by directly inhibiting the thrombin (unlike heparin which inhibits thrombin indirectly through antithrombin → so, heparin is an indirect thrombin inhibitor).

167. Treatment agent for scarlet fever is

a) Penicillin

b) Ciprofloxacin

c) Erythromycin

d) Chloramphenicol

Correct Answer - A
Ans. is 'a' i.e., Penicillin
Treatment :

- Immediate hospitalization and isolation of the patient is indicated. Penicillin is the treatment of choice.

168. Atomoxetine is used for ?

a) Nocturnal enuresis

b) ADHD

c) Temper tantrums

d) Patent ductusarteriosus

Correct Answer - B

Ans. is 'b' i.e., ADHD

- Atomoxetine it is selective norepinephrine reuptake inhibitor and is approved for use in ADHD.
- It is indicated in children > 6 years and in adults with concentration and attention problems.
- Atomoxetine absorbed orally, hydroxylated by CYP2D6 and excreted in urine, mainly as glucuronide.
- While majority of individuals are extensive metabolizers (EM), few are poor metabolizers (PM) due to polymorphism of CYP2D6.
- Inhibitors of CYP2D6 like fluoxetine, paroxetine, quinidine increase concentration and toxicity of atomoxetine.
- It should not be given with MAO inhibitors and is contraindicated in glaucoma.

169. Which of the following can prolong QT interval?

a) Nalidixic acid

b) Ofloxacin

c) Gatifloxacin

d) Pefloxacin

Correct Answer - C
Ans. is 'c' i.e, Gatifloxacin

170. Streptokinase causes increase in ?

a) Plasmin

b) Thrombin

c) Kallikrein

d) Angiotensin II

Correct Answer - A
Ans. is 'a' i.e., Plasmin
Streptokinase

- Fibrinolytic drug
- Obtained from group C streptococci
- Streptokinase is inactive as such. It combines with' circulating plasminogen molecules to form an activator complex, which then causes limited proteolysis of other plasminogen molecules to generate active enzyme plasmin.

171. Beta blocker with d isomer responsible for beta blocker action is ?

a) Nebivolol

b) Timolol

c) Esmolol

d) Propranolol

Correct Answer - A

Ans. is 'a' i.e., Nebivolol

Nebivolol is a novel betal-blocker with a greater degree of selectivity for betal-adrenergic receptors than other agents in this class and a nitric oxide (NO)-potentiating, vasodilatory effect that is unique among beta-blockers currently available to clinicians. Nebivolol is a racemic mixture with beta-blocker activity residing in the d-isomer; in contrast, l-nebivolol is far more potent in facilitating NO release.

Note :

- Beta blockers with 1 isomer having beta blocking activity are :?
- Propranolol, atenolol, metoprolol, esmolol, timolol

172. Tocilizumab is antibody against ?

a) IL 2

b) IL 4

c) IL 6

d) IL 8

Correct Answer - C
Ans. is 'c' i.e., IL 6
Tocilizumab

- It is the antibody directed against IL 6 receptor

It is approved for use in :

i. Rheumatoid arthritis
i. Neuromyelitisoptica
i. Castleman's disease
v. Systemic juvenile idiopathic arthritis

173. Fomepizole acts as antidote for ?

a) Methanol poisoning

b) Cannabis poisoning

c) Lead poisoning

d) Cadmium Poisoning

Correct Answer - A
Ans. is 'a' i.e., Methanol poisoning

- Methanol is highly toxic alcohol. It is metabolized to formaldehyde (by alcohol dehydrogenas) and formic acid (by acetaldehyde dehydrogenase).
- It is the accumulation of formic acid which causes toxic effects in methanol poisoning. Accumulation of formic acid results in *lactic acidosis/high anion gap metabolic acidosis* with low plasma bicarbonates, *blindness due to retinal damage, papilledema.*
- Methanol poisoning can be treated by supportive measures, *gastric lavage* and *sodium bicarbonate* (to treat acidosis). Ethanol is useful because it competitively inhibits the conversion of methanol to formic acid. Fomepizole can also be used as it is a specific inhibitor of alcohol dehydrogenase. Folic acid or folinic acid. Enhance the metabolism formic acid to CO_2. Hemodialysis may also be used.

174. About rectal route true is ?

a) Used for irritant and unpleasant drugs

b) Cannot be used in unconscious patient

c) There is predictable absorption of drug

d) Diazepam cannot be given via rectal route of administration

Correct Answer - A

Ans. is 'a' i.e., Used for irritant and unpleasant drugs

Rectal route of administration

- It is a route of systemic drug delivery.
- Irritant or unpleasant drugs can be put into the rectum as suppositories or retention enemas.
- Can be used in a patient with recurrent vomiting and in unconscious patient.
- Absorption of drug is slower, irregular and unpredictable.
- Drug absorbed into the external hemorrhoidal vein (50%) bypasses the liver but not that absorbed into the internal hemorrhoidal vein.
- Diazepam, indomethacin, ergotamine and paracetamol can be used via rectal route of administration.

175. Transdermal patch is not used for following drug?

a) GTN

b) Fentanyl

c) Nicotine

d) Naloxone

Correct Answer - D
Ans. is `d' i.e., Naloxone

176. Buprenorphine partial agonist at which opioid receptor?

a) Mu

b) Kappa

c) Delta

d) Lambda

Correct Answer - A
Ans. is 'a' i.e., Mu
Buprenorphine is partial agonist on mu receptor and antagonist at Kappa receptor.

177. Treatment for impetigo ?

a) Dicloxacillin

b) Ciprofloxacin

c) Gentamycin

d) Amoxicillin and clavulanic acid

Correct Answer - A
Ans. is 'a' i.e., Dicloxacillin

- Treatment of impetigo is either dicloxacillin or cephalexin can be given at a dose of 250 mg four times daily for 10 days.
- Topical mupirocin ointment is also effective.

178. Following are the side effects of thiazides except?

a) Hypokalemia

b) Hypocalcemia

c) Hepatic coma

d) Impotence

Correct Answer - B

Ans. is 'b' i.e., Hypocalcemia

Following are the side effects of thiazides:

- Hypokalemia
- Acute saline depletion, hemoconcentration and increased risk of peripheral venous thrombosis
- Dilutionsalhyponatremia
- Nausea omitting diarrhea
- Rarely headache, giddiness, weakness, parethesias, impotence
- Hearing loss
- Rashes, photosensitivity
- Hyperuricemia
- Hyperglycemia hyperlipidemia o Hypercalcemia
- Magnesium depletion
- Aggravated renal insufficiency
- Brisk diuresis leading to mental disturbance and hepatic coma

179. Weight gain is seen with all of the following antipsychiatric medications except ?

a) Quitiapine

b) Resperidone

c) Clozapine

d) Molindone

Correct Answer - D

Ans. is `d' i.e., Molindone

- Antipsychotics usually cause weight gain. *Quitiapine, olanzapine, clozapine and resperidone, all have been implicated in weight gain.*
- *Molindone has often been reported to cause weight loss rather than weight gain.*

180. Loading dose depends on ?

a) Volume of distribution

b) Elimination rate

c) Half life

d) Plasma volume

Correct Answer - A
Ans. is 'a' i.e., Volume of distribution
Loading dose is governed by volume of distribution and *volume of distribution* is affected by *lipid solubility.*
Maintenance dose is governed by *clearance (excretion) of drug and half life.*

181. Which of the following drugs has both antihelminth and antiprotozoal activity ?

a) Nitazoxanide

b) Emetine

c) Chloroquine

d) Diloxanidefuroate

Correct Answer - A
Ans. is 'a' i.e., Nitazoxanide
Nitazoxanide

- This is the salicylamidecogener of the antihelminthniclosamide, introduced for the treatment of giardiasis and cryptosporidiosis and is also active against other protozoa and helminthes including E. histolytica, T. vaginalis, Ascaris and H. nana.
- It is a prodrug which onn absorption is converted into active for tizoxanide.
- Tizoxanide is an inhibitor of PFOR enzyme that is the essential pathway of electron transport energy metabolism in anaerobic organisms.

182. Reason for hepatic involvement in oral contraceptives is ?

a) Estrogen

b) Progesterone

c) Estrogen +Progesterone

d) Mixed trace elements

Correct Answer - A

Ans. is 'a' i.e., Estrogen

Hepatotoxicity with oral contraceptive pills

- While early formulations of OCPs were associated with frequent serum enzyme elevations, current formulations and hormonal replacement therapy have not been linked to ALT or alkaline phosphatase elevations at rates any higher than occur with placebo.
- Estrogens in OCPs can cause mild inhibition of bilirubin excretion leading to jaundice in patients with inherited forms of bilirubin metabolism such as the Dubin Johnson syndrome.
- It can induce a clinically apparent cholestatic liver injury which typically arises during the first few cycles of therapy, and rarely after the six months.
- It has also been linked to hepatic tumors, both benign and malignant.

183. A = ACE inhibitor, B = beta blocker, C = calcium channel blocker, D= diuretics. For elderly with hypertension antihypertensive drug of choice is ?

a) A or D

b) A or B

c) A or C

d) C or D

Correct Answer - D
Ans. is 'd' i.e., C or D
Pharmacological treatment of hypertension
Indications of drug therapy (the British hypertension society guidelines).
When sustained BP exceeds 160/100 mmHg or.
When BP is in the range of 140-159 / 90-99 mmHg and there is target organ damage or cardiovascular disease.
For diabetics when BP exceeds 140/90 mmHg.
The optimal target is to lower BP to or below 140/85 mmHg in nondiabetics and 140/80 mmHg in diabetics (WHO target is 130/85 mmHg).
Drug therapy
A simple stepped AB/CD regimen is used.

184. Which drug is used in amytrophic lateral sclerosis?

a) Riluzole

b) Glatirame

c) Tacrine

d) Olanzapine

Correct Answer - A
Ans. is 'a' i.e., Riluzole
Drugs used in neurodegenerative disorders
Multiple sclerosis

- Beta-interferon or glatirame decrease the frequency of relapses in relapsing remitting MS. Recently, natalizumab (a monoclonal antibody) has been tried.
- Amyotropic lateral sclerosis
- Riluzole (NMDA antagonist) is useful in ALS. To relieve spasticity Baclofen may be used.

185. Rotigotine is ?

a) Dopamine agonist

b) Dopamine antagonist

c) GABA agonist

d) GABA antagonist

Correct Answer - A
Ans. is 'a' i.e., Dopamine agonist
Rotigotine

- Rotigotine is a *dopamine agonist* drug and is indicated in the treatment of *parkinosonism.*
- Rotigotine is intended to be delivered through *transdermal patches,* so as to ensure a slow and constant dosage in a 24-hour period.
- Side effects are--skin reaction at the patch site, nausea, vomiting, diziness, drowsiness, insomnia.

186. Counterfeit drug is ?

a) Fake medicine

b) Contains the wrong ingredient

c) They have active ingredient in wrong dose

d) All the above

Correct Answer - D
Ans. is 'd' i.e., All the above
Counterfeit medicine is fake medicine.
It may be contaminated or contain the wrong or no active ingredient.
They could have the right active ingredient but at the wrong dose.
Counterfeit drugs are illegal and may be harmful to your health.

187. Most common receptor for typical antipsychotics is ?

a) D1

b) D2

c) D3

d) D4

Correct Answer - B

Ans. is 'b' i.e., D2

ANTIPSYCHOTICS

- Antipsychotic *(neuroleptic)* drugs can be divided into typical and atypical.

Typical

- Block D_2 receptors
- Have significant extrapyramidal symptoms (except for thioridazine) - Parkinsonism, Acute muscular dystonia, Akathisia, Malignant neuroleptic syndrome, *Tardive dyskinesia.*

Atypical

- These are *newer generation (second generation)* antipsychotics that have weak D_2 blocking but potent 5-HT2 antagonistic activity.
- *Called atypical because they have no D2 blocking property (except resperidone).*
- *Extrapyramidal side effects are minimal* (Resperidone can cause some extrapyramidal effects).
- Have no antiemetic effect.
- Examples are → *Clozapine, Risperidone, Olanzapine, Quetiapine, Aripiprazole, Ziprasidone.*

188. Incretin like function is seen in ?

a) Exenatide

b) Miglital

c) Poiglitazone

d) Repaglinide

Correct Answer - A
Ans. is 'a' i.e., Exenatide

- Exenatide is a synthetic glucagon-like peptide - 1 (GLP-1) analogue.
- GLP-1 is an important incretin that is released from gut in response to oral glucose.
  - But GLP-1 can not be used clinically as it is degraded rapidly by enzyme dipeptidly peptidase → (DPP-4).
- Exenatide is resistant to DPP-4.
  - It acts similar to GLP-1 → Enhancement of postprandial insulin release, suppression of glucagon release and appetite as well as slowing of gastric emptying.
- It is given by subcutaneous route & used in type 2 DM
- Nausea is most important side effect.

189. Patient on treatment on carbidopa + levodopa for 10 yrs now has weaning off effect. What should be added to restore action ?

a) Tolcapone

b) Amantadine

c) Rasagiline

d) Benzhexol

Correct Answer - A

Ans. is A i.e., Tolcapone

- Both Entacapone and tolcapone enhance and prolong the therapeutic effect of levodopa-carbidopa in advanced and fluctuating parkinsons disease. They may be used to smoothen off the 'wearing off', increase 'on' time and decrease 'off' time, improve activities of daily living and allow levodopa dose to be reduced.

Tolcapone

- It is a drug used to treat Parkinson's disease (PD).
- It is a selective, potent and reversible nitrocatechol-type inhibitor of the enzyme catechol-O-methyltransferase (COMT).
- In comparison with entacapone, another nitrocatechol COMT inhibitor, tolcapone has a longer half life (2.9 hours vs. 0.8 hours) and can better penetrate the blood–brain barrier, acting both in the central nervous system and in the periphery. However, entacapone is less toxic for the liver.
- Tolcapone improves the bioavailability and reduces the clearance of levodopa and subsequently dopamine from the CNS.
- Without administration of tolcapone, the beneficial effects of

levodopa tend to wear off more quickly, resulting in motor fluctuations.

190. Which of these is not used for the treatment of typhoid ?

a) Chloramphenicol

b) Ciprofloxacin

c) Ceftriaxone

d) Cefixime

Correct Answer - D
Ans. is 'd' i.e., Cefixime

191. LT antagonists are used in asthma for ?

a) Along with beta agonists to reduce steroids

b) In place of beta blockers as sole therapy

c) Prophylactic therapy for mild to moderate asthma

d) Definitive therapy in acute attack of asthma

Correct Answer - C
Ans. is 'c' i.e., Prophylactic therapy for mild to moderate asthma
Monteleukast and *zafirleucast* are cystenyl LT_1 (cys LT_1) receptor antagonists.
They are indicated for prophylactic therapy of mild to moderate asthma as alternatives to inhaled glucocorticoids.

192. Which is a long acting insulin?

a) Lispro

b) Aspart

c) Glargine

d) Glulicine

Correct Answer - C
Ans. is 'c' i.e., Glargine

193. Steroid with max mineralocorticoid activity ?

a) Fludrocortisone

b) DOCA

c) Prednisolone

d) Triamsinolone

Correct Answer - A
Ans. is 'a' i.e, Fludrocortisone

194. Young child weighing 20 kg was given a drug in the dose 100mg/kg body weight. The plasma concentration of the drug is 2mg/ dl and the clearance is 200 ml/hr. What is the time required to reach steady state plasma concentration -

a) 10 hrs

b) 20hrs

c) 30hrs

d) 40hrs

Correct Answer - B
Ans. is 'b' i.e., 20 hours
Volume of distribution = total dose/plasma concentration
Total dose= dose/ kg x body weight = 100 x 20 = 2000 mg
Volume of distribution = 2000/2 = 1000
Half life = 0·693 x Volume of distribution/ clearance = 0·693 x 1000/200 = 3·5 hours
Time required to reach steady state plasma concentration is 5·5 half lives = 5·5 x 3·5 = 19·25 hours
Therefore the most appropriate answer is 20 hours.

195. Patient on verapamil should not be given beta blocker as ?

a) Conduction block

b) Bronchospasm

c) Neurogenic shock

d) Anaphylaxis

Correct Answer - A

Ans. is 'a' i.e., Conduction block

Adverse effects of CCBs

- Nausea, constipation and bradycardia are more common with verapamil.
- Verapamil can accentuate conduction defect-should be avoided in 2^{nd} & 3^{rd} degree block, in sick sinus syndrome and along with 13-blocker.
- Most common side effects of DHPs are palpitation, flushing, hypotension, headache, ankle edema, drowsiness and nausea.
- Nifedipine can paradoxically increase the frequency of angina in some patients.
- Nifedine can cause voiding difficulty in elderly (relaxant effect on bladder) and glucose intolerance (decreases insulin release).

196. Drug that decreases LpA in blood ?

a) Statin

b) Nicotinic acid

c) Ezetimibe

d) CETP inhibitors

Correct Answer - B
Ans. is 'b' i.e., Nicotinic acid

- Nicotinic acid reduces Lp(a) while statins do not have any effect on Lp(a).

197. Glucuronidation takes place in ?

a) Liver

b) RBC

c) Pancreas

d) Thyroid

Correct Answer - A
Ans. is 'a' i.e., Liver
GLUCURONIDATION

- This is the most important synthetic reaction carried out by a group of UDP-glucuronosyl transferases (UGTs).
- Glucuronidation occurs mainly in the liver, although the enzyme responsible for its catalysis, UDP?glucuronyltransferase, has been found in all major body organs (e.g., intestine, kidneys, brain, adrenal gland, spleen, and thymus).
- Compounds with a hydroxyl or carboxylic acid group are easily conjugated with glucuronic acid which is derived from glucose.
- Examples are- chloramphenicol, aspirin, paracetamol, lorazepam, morphine, metronidazole.
- Not only drugs but endogenous substrates like bilirubin, steroidal hormones and thyroxine utilize this pathway.
- Glucuronidation increases the molecular weight of the drug which favours its excretion in bile.
- Drug glucuronides excreted in bile can be hydrolysed bybacteria in the gut-the liberated drug is reabsorbed and undergoes the same fate. This enterohepatic cycling of the drug prolongs its action, e.g. phenolphthalein, oral contraceptives.

198. Digitalis produces which of the following changes in ECG ?

a) Tall T waves

b) ST segment elevation

c) Prolonged QT interval

d) Prolonged PR interval

Correct Answer - D

Ans. is 'd' i.e., Prolonged PR interval

There are some characteristic ECG changes by digitalis use, some of which occur at therapeutic concentration and some occurs at toxic level :

At therapeutic level

- Prolongation of PR interval
- Scooping of ST segment → Also known as *digitalis wave or dig sag* there is down sloping ST depression (initially)
- Shortening of QT interval
- Decreased T wave amplitude/or T wave inversion

At toxic level: Above changes are amplified

- Prolongation of PR interval → conduction block may occur
- T wave inversion
- ST depression
- QT interval shortens further
- Increased automaticity → Arrhythmias

199. Antifungal which can be used orally but not iv is?

a) Voriconazole

b) Amphoterecin B

c) Terbinafine

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Terbinafine

200. Mechanism of action tacrolimus is ?

a) Inhibition of calcineurin

b) Antimetabolite

c) mTOR inhibitor

d) Inhibition of DNA synthesis

Correct Answer - A

Ans. is 'a' i.e., Inhibition of calcineurin

Tacrolimus

- It is a *macrolide* immunosuppressant agent.
- Its *mechanism of action* is similar to cyclosporine, i.e. *inhibition of transcription of IL-2 and T-cell proliferation,* but it binds to other immunophilin called *FKBP* (in contrast to cyclosporine which binds to cyclophilin). Subsequent steps are some, i.e. *inhibition of calcineurin,* which inhibits T cell activation.
- Tocrolimus is 10-100 times more potent than cyclosporine.
- It is also *more toxic* than cyclosporin.
- Adverse effects are *nephrotoxicity* (most common), *neurotoxicity, hyperglycemia (DM).*
- *Mechanism of nephrotoxicity → Periglomerular afferent arteriolar vasoconstrication and reduced GFR.*

201. Long acting corticosteroid is ?

a) Triamcinolone

b) Betamethasone

c) Hydrocortisone

d) Prednisolone

Correct Answer - B
Ans. is 'b' i.e., Betamethasone

- *Short acting glucocorticoids (t1/2 : 8-12 hrs.) : Cortisol, hydrocortisone.*
- *Intermediate acting glucocorticoids (t1/2 : 12-36 hrs.) : Prednisolone, methylprednisolone, triamcinolone.*
- *Long acting glucocorticoids (t1/2 :* 36-54 *hrs.) : Dexamethasone, betamethasone.*

202. Plasma protein bound drug distributed in which compartment ?

a) Extracellular

b) Intravascular

c) Interstitial

d) Extravascular

Correct Answer - B

Ans. is 'b' i.e., Intravascular

Clinical significance of protein binding:

1. High plasma protein bound drugs are largely restricted to the vascular compartment and tend to have lower volume of distribution.
2. The bound fraction is not available for action.
3. High degree of protein binding generally makes the drug long acting, because bound fraction is not available for metabolism or excretion, unless it is actively excreted by liver or kidney tubules.
4. 1n *nephrotic syndrome and other conditions causing hypoproteinemia, protein binding will be altered.* 5.Highly protein bound drugs are not removed by haemodialysis and need special techniques for treatment of poisoning.
5. Protein bound drugs can give rise to displacement interactions :
6. In hypoalbuminemia, binding may be reduced and high concentrations of free drug may be attained, e.g. phenytoin and furasemide.

203. Adrenocortical suppression causing drugs are all except ?

a) Prednisone

b) Ketoconazole

c) Mitotane

d) Spironolactone

Correct Answer - D
Ans. is 'd' i.e., Spironolactone
Drugs causing adrenocortical suppression are:

- Steroids (prednisone, hydrocortisone, and dexamethasone)
- Aminoglutethimide
- Fludrocortisone
- Ketoconazole
- Megestrol
- Metyrapone
- Mitotane

204. Following are the advantages of sustained release preparation over the conventional preparations except ?

a) Decreased frequency of administration

b) Improved compliance

c) Less incidence of high peak side effects

d) Drugs with half life > 4 hours are suitable

Correct Answer - D

Ans. is 'd' i.e., Drugs with half life > 4 hours are suitable

- **Acts for a longer period.**
- Frequency of administration is reduced -more convenient.
- Improved patient compliance - a single morning dose is less likely to be forgotten/omitted than a 6 or 8 hourly regimen; a monthly or quarterly administered contraceptive over one that has to be taken daily.
- Large fluctuations in plasma concentration are avoided.
- Side effects related to high peak plama level just after a dose (e.g. nifedipine) would be minimized.
- Better round-the-clock control of blood sugar, etc.
- Drug effect could be maintained overnight without disturbing sleep, e.g. antiasthmatics, anticonvulsants, etc.

205. Which antiepileptic drug is least secreted in breast milk ?

a) Ethosuximide

b) Clonazepam

c) Gabapentin

d) Carbamazepine

Correct Answer - B
Ans. is 'b' i.e., Clonazepam

206. Drug which decreases efficacy of testosterone

a) Isoniazid

b) Ketoconazole

c) Rifampicin

d) None

Correct Answer - B
Ans. is 'b' i.e., Ketoconazole

207. Fluoroquinolone with minimum bioavailability ?

a) Levofloxacin

b) Moxifloxacin

c) Norfloxacin

d) Ciprofloxacin

Correct Answer - C
Ans. is 'c' i.e., Nortloxacin

208. Danazol has which of the following actions ?

a) Weak androgenic

b) Progestational

c) Anabolic

d) All the above

Correct Answer - D

Ans. is 'd' i.e., All the above

Danazole

- It has *weak androgenic, anabolic* and *progestational* activity.
- *The most prominent action is suppression of gonadotropin (FSH/LH) from pitutary* in both men and women → inhibition of testicular/ovarian function.

Uses are :

1. Endometriosis (major use)
2. Fibrocystic breast disease
3. Infertility
4. Menorrhagia
5. Hereditary angioneuretic edema

Side effects are *complete amenorrhoea, androgenic effects* (acne, hirusitism, decreased breast size, deepening of voice, edema, weight gain), loss of libido in men, hot flushes in women, night sweats and muscle cramp.

Liver enzyme may be raised.

209. Agonist antagonist combination acting on the same receptor is ?

a) Isoprenaline and propranolol

b) Adrenaline and histamine

c) Salbutamol and leukotriene

d) Estrogen and tamoxifen

Correct Answer - A
Ans. is 'a' i.e., Isoprenaline and propranolol
Receptor antagonists (Pharmalogical antagonists)
Receptor antagonists are those drugs that blocks the action of agonist by acting on same receptors. Example:
Isoprenalineis β_1 and β_2 receptor agonist while *propranolol* has antagonistic action on β_1 and β_2 receptors.

Note :
Physiological antagonists
Physiological antagonists are those that produce opposite action by acting on different receptors.

Example

1. *Histamine* causes bronchoconstriction via H_1receptors and this action is antagonized by *adrenaline* which causes bronchodilodation through β_1 receptors
2. *Leukotrienes* cause bronchoconstriction via cystinyl leukotriene receptors and this action is antagonised by *salbutamol* which causes bronchodilatation through β_2 receptors.

210. Not a drug recommended for P. falciparum is ?

a) Quinine

b) Ciprofloxacin

c) Artemether

d) Doxycycline

Correct Answer - B
Ans. is 'b' i.e., Ciprofloxacin

211. Following is true about iron dextran except ?

a) It is parenteral iron preparation

b) It can be given either iv or im

c) It binds to transferrin

d) It is not excreted

Correct Answer - C
Ans. is 'c' i.e., It binds to trnasferrin

212. Compared to high molecular weight heparin following is true about low molecular weight heparin ?

a) Monitoring is not needed for low molecular weight heparin

b) Daily two subcutaneous doses are essential

c) They are easily filtered at the glomerulus

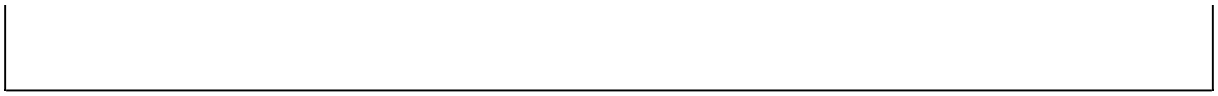
d) They do not interact with plasma proteins

Correct Answer - B

Ans. is 'b' i.e., Daily two subcutaneous doses are essential

<u>Advantages of LMWH</u>

- Longer, more consistent and predictable response —> *Single daily dose is sufficient by subcutaneous route.* o Lower risk of osteoporosis and HIT syndrome.
- *Bleeding chances are less :* LMW heparins have a different anticoagulant profile.
- They selectively inhibit factor Xa with little effect on antithrombin and coagulation in general.
- They act only by inducing conformational change in AT III.
- They appear to have lesser antiplatelet action.
- As a result they have a small effect on a PTT and whole blood clotting time.
- *Since a PTT/clotting times are not prolonged (much) laboratory monitoring is not needed, and the incidence of haemorrhagic complication is less.*
- They are easily filtered from glomerular capillaries because of there smaller molecular weight.
- *LMW heparins do not interact with plasma proteins.*



213. Most variable absorption is seen with which route?

a) Oral

b) Intramscular

c) Intravenous

d) Per rectal

Correct Answer - A
Ans. is 'a' i.e., Oral

- *Oral administration of drugs is safe, convenient and economical, but has the potential for the most variable absorption pattern.*

Clinical pharmacology
Routes of drug administration
Drugs are administered by various routes.
Different routes have different characteristics, so that the route of administration may have a profound effect upon the speed and efficiency with which the drugs act.
The routes of drug administration may be:
i) Local route
ii) Systemic route
Local route - Drug is administered at the site of lesion.
Systemic route - Drug is administered through systemic routes is intended to be absorbed into the blood stream and distributed all over, including the site of action, through circulation.

214. Cephalosporin causing thrombocytopenia is ?

a) Cefixime

b) Ceftazidime

c) Cefoperazone

d) Cefdinir

Correct Answer - B

Ans. is 'b' i.e., Ceftazidime

Adverse effects of cephalosporins

- *Hypersensitivity reaction* - It is the most usual side effect. There is cross allergy between penicillins and cephalosporine in 5-10% of cases.
- *Diarrhea* - due to alteration of gut flora, *maximum with oral cephradine and parentral cefperazone (cefperazone is significantly excreted in bile)* → May cause pseudomembranous colitis caused by Cl. difficle.
- *Superinfection - Most common organisms are candida and pseudomonas,* less common are staphylococci, proteus.
- *Ceftriaxone* achieves high concentration in bile and, as the calcium salt, may precipitate to cause symptoms resembling cholelithiasis (Biliary pseudolithiasis).
- *Nephrotoxicity* - highest with *cephaloridine.*
- *Bleeding* - ceftriaxone, cefoperazone, moxalactam & cefamandole can cause *hypoprothrmbinemia* and bleeding.
- *Disulfiram like reaction - cefamandole, cefoperazone, moxalactam* and *cefotetan* can cause disulfiram like reaction with alcohol.
- *Neutropenia* and *thrombocytopenia* can be caused by *ceftazidim.*

215. Varenicline acts by ?

a) Partial nicotine receptor agonist

b) Nicotine receptor antagonist

c) Both agonist and antagonist at nicotine receptor

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Partial nicotine receptor agonist
Varenicline

- It is partial agonist at the nicotine receptor.
- It is used in nicotine addicts.

216. Anti-inflammatory dose of aspirin ?

a) 500 mg/d

b) 1 - 2 g/d

c) 3 - 6 g/d

d) 6 - 12 g/d

Correct Answer - C
Ans. is 'c' i.e., 3 - 6 g/d
The anti-inflammatory action of aspirin is exerted at high doses of 3 - 6 g/ day or 100 mg/ Kg/ day.
The anti-inflammatory action is mainly due to inhibition of COX, causing inhibition of PGs synthesis.
In addition to COX inhibition, quenching of free radicals may contribute to its anti-inflammatory action.

217. Which of the following drug substrate combinations do not match ?

a) CYP 3A4/5 - simvastatin

b) CYP 2D6 - SSRI

c) CYP 2C8/9 - mifepristone

d) CYP 2C19 - propranolol

Correct Answer - C
Ans. is 'c' i.e., CYP 2C8/9 - mifepristone

218. Drugs which potentiate effect of NMDA at NMDA receptors are all except ?

a) Ketamine

b) Aspartic acid

c) D alanine

d) Homocysteic acid

Correct Answer - A
Ans. is 'a' i.e., Ketamine
Ketamine is NMDA receptor blocker so it does not potentiate the NMDA action.

219. Most common renal sequel of lithium toxicity is ?

a) Nephrogenic DM

b) Renal tubular acidosis

c) Glycosuria

d) MPGN

Correct Answer - A

Ans. is 'a' i.e., Nephrogenic DM

Lithium associated renal toxicity

- The use of lithium salts for the treatment of manic-depressive illness may have several renal sequelae, the most common of which is nephrogenic diabetes insipidus manifesting as polyuria and polydipsia.
- Lithium accumulates in principal cells of the collecting duct by entering through the epithelial sodium channel (ENaC), where it inhibits glycogen synthase kinase 3 and down- regulates vasopressin-regulated aquaporin water channels.
- Less frequently, chronic tubulointerstitial nephritis develops after prolonged (greater than 10-20 years) lithium use and is most likely to occur in patients that have experienced repeated episodes of toxic lithium levels.

220. Mechanism of action of timolol is ?

a) Nonselective beta blocker

b) Nonselective alpha blocker

c) Selective beta 1 blocker

d) Selective beta 2 blocker

Correct Answer - A
Ans. is 'a' i.e., Nonselective beta blocker
Timolol is a non selective beta blocker (betal + beta 2).
Thus when it is used in the treatment of glaucoma it can precipitate an attack of asthma by blocking beta 2 receptors.

221. Mechanism of action of levosimenden is ?

a) Inoconstrictor

b) Potassium channel opener

c) Sodium channel opener

d) Beta blocker

Correct Answer - B
Ans. is b i.e., Potassium channel opener
Levosimendon
A new ionodilator is Levosimendon
It has inodilator effect by:
i) Inotropic effect : Levosimendon is calcium sensitiser, i.e. it increases the sensitivity of the heart to calcium that results in increased cardiac contractility without a rise in intracellular calcium.
ii) Vasodilatory effect : by opening ATP-sensitive potassium channels in vascular smooth muscles it causes smooth muscle relaxation.

222. Which of the following is not an anti histaminic drug of the ethanolamine group?

a) Clemastine

b) Diphenhydramine

c) Dimenhydrinate

d) Chlorpheniramine

Correct Answer - D
Ans. is d i.e., Chlorpheniramine
Ethanolamine derivative group of antihistaminics are:

- Carbinoxamine maleate
- Clemastinefumarate
- Diphenhydrmine HC1
- Dimenhydrinate

223. All of the following can precipitate porphyria except ?

a) Steroids

b) Griesiofulvin

c) Penicillin

d) Estrogen

Correct Answer - C
Ans. is 'c' i.e., Penicillin
Penicillin is a safe drug in acute intermittent porphyria
Drugs precipitating acute intermittent porphyria

- *Barbiturates*
- *Griseofulvin*
- *Chlorpropramide*
- *Rifampicin*
- *Oral contraceptives*
- *Estrogen*
- *Phenytoin*
- *Sulfonamides*

224. A drug having 40% absorption and hepatic extraction ratio of 0.6. What is the bioavailability of that drug?

a) 16%

b) 24%

c) 20%

d) 28%

Correct Answer - A

Ans. is 'a' i.e., 16%

Absortion of drug is 40% i. e. if 100 mg of drug is taken 40 mg will be absorbed.

Hepatic extraction ratio is 0.6 i.e. out of the absorbed dose 60% will be removed by liver; so from the absorbed 40 mg 60% removed i. e. 24 mg removed.

Thus finally the remaining 16 mg of the total dose taken reaches the systemic circulation. So bioavailability is 16% as 16mg of the total 100 mg finally reached the systemic circulation

225. XDR TB is resistance to ?

a) Isoniazid

b) Isoniazid + Rifampicin

c) Isoniazid + Rifampicin + Ethambutol

d) Isoniazid + Rifampicin + Kanamycin

Correct Answer - D
Ans.is d i.e., Isoniazid + Rifampicin + Kanamycin
Treatment of extensive drug resistance (XDR) TB

- XDR-TB is defined as *resistance to any fluoroquinolone* and *at least one of the following three second-line drugs (capreomycin, kanamycin, amikacin),* in addition to multidrug resistance.
- The Regimen for XDR-TB would be of 24-30 months duration, with 6-12 months Intensive Phase (IP) and 18 months Continuation Phase (CP).

Regimen is :-

- i) Intensive phase (6-12 months) : *Seven drugs :* Capreomycin, PAS, moxifloxacin, high dose INH, clofazimine, Linezolid, amoxyclay.
- ii) Continuation phase (18 months) : *Six drugs :* PAS, moxifloxacin, high dose INH, clofazimine, linezolid, amoxyclay.

226. Most serious side effect of valproate is

a) Fulminant hepatits

b) Spina bifida

c) Weight gain

d) Thrombocytopenia

Correct Answer - A

Ans. is 'a' i.e., Fulminant hepatits

Valproate

- **Valproate acts by multiple mechanism :**

1. Prolongation of inactivated Na* channel.
2. Inhibition of T type Ca' current.
3. Inhibition of degradation of GABA by GABA transminase → facilitation of GABA mediated Cl- channel opening.

- *Its most serious adverse effect is fulminant hepatitis especially in children below 3 years.*
- *Used during pregnancy, it has produced spina bifida and other neural tube defects.*
- Uses (other than epilepsy) --> mania & bipolar illness, prophylaxis of migraine, trigeminal neuralgia, tardive dyskinesia.

Adverse effect of Valproate

- Neurological - Ataxia, sedation,tremor
- Systemic- Hepatotoxicity, thromobocytopenia,GI irritation, weight gain, transient alopecia, hyperammonemia, pancreatitis,coagulation disorder.

227. Hydroxyurea mechanism of action in cancer is by inhibiting the enzyme ?

a) Ribonucleotide diphosphate reductase

b) Ribonucleotide oxidase

c) DNA lyase

d) DNA synthetase

Correct Answer - A

Ans. is 'a' i.e., Ribonucleoside diphosphate reductase

Hydroxyurea

It blocks the conversion of ribonucleotides to deoxyribonucleotides by inhibiting the enzyme ribonucleoside diphosphate reductase; thus inhibits the DNA synthesis; S phase specific.

Myelosuppression is the major toxicity. GI disturbances and cutaneous reactions (pigmentation) also occur.

It is used in CML, psoriasis, polycythemia vera and some solid tumors.

It is also used as radiosensitizer before radiotherapy and is a first line drug for sickle cell disease in adults.

228. Nitrosoureas used in the treatment of cancer are?

a) Carmustine

b) 5FU

c) Methotrexate

d) Cisplatin

Correct Answer - A
Ans. is 'a' i.e., Carmustine
Nitrosoureas

- Nitrosoureas (Lomustine and carmustine) are highly lipid soluble alkylating agents - cross blood - brain barrier → Effective in meningeal leukaemias and brain tumours.
- *Nitrosoureas are highly lipid soluble and can cross blood brain barrier used in brain tumors like gliomas.*
- Because they cross BBB, most common adverse effects are nausea, vomiting and other CNS effects.
- Bone marrow depression is peculiarly delayed, taking nearly 6 weeks to develop. → *delayed neutropenia*
- Nitrosoureas can cause visceral fibrosis and renal damage.

229. Gemcitabine is used mainly in which cancer ?

a) Colorectal

b) Breast

c) Pancreatic

d) Cranipharyngioma

Correct Answer - C
Ans. is 'c' i.e., Pancreatic

230. Oxcarbazepine true is all except ?

a) Metabolises itself

b) Less chances of hyponatremia than carbazepine

c) It is less enzyme inducer than carbamazepine

d) Less chances of hepatotoxicity than carbamazepine

Correct Answer - B

Ans. is 'b' i.e., Less chances of hyponatremia

Oxcarbazepine

- It is rapidly converted into active metabolite.
- Drug interactions and autoinduction of its own metabolism are less marked, because it is a weak enzyme inducer.
- Risk of hepatotoxicity is lower than with carbamazepine.
- Chances of hyponatremia are more with oxcarbazepine compared to carbamazepine.
- It 1·5 times less potent than carbamazepine.

231. Heparin activates following factors except ?

a) IIa

b) VIIa

c) IXa

d) Xa

Correct Answer - B

Ans. is `b' i.e., Villa

Chemical nature and preparation of Heparin

- Heparin is a sulfated mucopolysaccharide which occurs in the secretory granules of mast cells.
- *It is the strongest organic acid in the body and in the solution it carries an electronegative charge.*
- It is prepared commercially from a variety of animal tissues (generally *porcine intestinal mucosa* or *bovine lung).*

Mechanism of Action of Heparin

- Heparin acts by *activating antithrombin* which is a naturally occuring inhibitor of activated coagulation factors of intrinsic and common pathway.

232. Maximum liver toxicity is seen with which anti -TB drug?

a) Isoniazid

b) Rifampicin

c) Pyrazinamide

d) Streptomycin

Correct Answer - C
Ans. is 'c' i.e., Pyrazinamide
Three first line antitubercular drugs are associated with hepatotoxicity :?
i) Rifampicin
ii) INH
iii) Pyrazinamide

- Of the three, *rifampicin is least likely to cause hepatocellular damage,* although it is associated with cholestatic jaundice.
- *Pyrazinamide is the most hepatotoxic of the first line drugs.*
- Among the second-line drugs, ethionamide, PAS and protionamide can also be hepatotoxic, although less so than any of the first line drugs.

233. Fastest acting antithyroid drugs ?

a) Iodides of Na/ K

b) Propylthiuracil

c) Methimazole

d) Nitrates

Correct Answer - A
Ans. is 'a' i.e., Iodides of Na
Iodine and Iodides

- Iodine is the fastest acting thyroid inhibitor
- Most important action is inhibition of hormone release (thyroid constipation); but all facets of thyroid synthesis may be affected.
- Excess iodide inhibits its own transport in thyroid cells and may alter the redox potential of cells, thus interfering iodination → reduced T4/T3 synthesis (Wolff-chaikoff effect).

234. Natalizumab is used in treatment of ?

a) Muliple sclerosis

b) Breast carcinoma

c) Psoriasis

d) B cell lymphoma

Correct Answer - A

Ans. is 'a' i.e., Multiple sclerosis

Treatment of multiple sclerosis

1. *Treatment of acute attack*

- Corticosteroids (Methylprednisolone, prednisolone) are used

2. *Treatment with disease-modifing agents that reduce the biological activity of MS*

- Disease modifying agents for multiple sclerosis are (i) *IFN-13 la;* (ii) *IFN-13 lb,* (iii) Glatiramer; (iv) Natalizumab; (v) Finoglimod: (vi) Mitoxantrone; (vii) Cladaribine.

3. *Other treatment options*

- Other off-label treatment options are (i) methotrexate; (ii) cyclophosphamide; (iii) IV immunoglobulins; (iv) azathioprine.

4. *Symptomatic Treatment*

- It includes healthy diet, regualr exercise.
  - Treatment of rigidity (baclofen, diazepam, tizanidine, dantroline)
  - Treatment of weakness (Potassium channel blockers like 4-aminopyridine)
  - Treatment of pain by anticonvulsants (carbamezapine, phenytoin, gabapentin, pregabalin), or antidiepressants (mexiletin).
  - Treatment of UTI, bladder dysfunction, constipation, depression, fatigue and cognitive problems.

235. Special feature of glargine insulin is ?

a) It produces a smooth peakless effect

b) It is not suitable for once daily administration

c) It remains souble at pH 7

d) It can control meal time hyperglycemia

Correct Answer - A

Ans. is 'a' i.e., It produces a smooth peakless effect

InsuinGlargine

- It is long acting biosynthetic insulin.
- It remains soluble at pH 4 of the formulation and precipitates at neutral pH on subcutaneous administration.
- Onset of action is delayed.
- It produces a smooth peakless effect.
- It is suitable for once daily administration.
- Low incidence of night time hypoglycemia.
- It does not control meal time yperglycemia.

236. Mechanism of action Trilostane ?

a) 11 beta hydroxylase inhibitor

b) 1 alpha hydroxylase inhibitor

c) 3 betahydroxysteroiddehydrgenase inhibitor

d) 7 alpha hydrolase inhibitor

Correct Answer - C
Ans. is 'c' i.e., 3 beta hydroxyl steroid dehydrogenase inhibitor

237. Treatment of choice for cheese reaction ?

a) Prazocin

b) Pentazocin

c) Phentolamine

d) Phenoxybenzamine

Correct Answer - C

Ans. is 'c' i.e., Phentolamine

Cheese reaction

- Certain varieties of cheese, beer, wines, picked meat and fish, yeast extract contain large quantities of tyramine, dopa.
- In MAO inhibited patients these indirectly acting sympathomimetic amines escape degradation in the intestinal wall and liver → reaching into systemic circulation they displace large amount of NA from adrenergic nerve endings Hypertensive crisis, cerebrovascular accidents.
- T*his can be treated by i.v. injection of a rapidly acting phentolamine. Prazosin and chlorpromazine are alternative.*

238. Why quinine is unsafe in pregnancy?

a) It causes hemolysis

b) It causes hypokalemia

c) It causes hyponatremia

d) It causes smooth muscle contraction

Correct Answer - A

Ans. is 'a' i.e., It causes hemolysis

Quinine occasionally causes hemolysis, especially in pregnant women and in patients with falciparum malaria resulting in hemogloginuria and kidney damage. Also if used in pregnancy special care should be taken to prevent hypoglycemia.

Ouinine

- It is levo rotatory alkaloid obtained from cinchona bark. Its d-isomer quinidine is used as an antiarrhythmic.
- Quinine is an erythrocytic schizontocide for all species of plasmodium.
- Quinine has no effect on pre and exoerythrocytic stage.
- Mechanism of action is similar to chloroquine.

239. Anti HIV drug used for prevention of vertical transmission ?

a) Nevirapine

b) Lamivudine

c) Efavirez

d) Tenofovir

Correct Answer - A

Ans. is 'a' i.e., Nevirapine

Treatment during pregnancy

- HIV infected mother can transmit the virus to fetus/infant during pregnancy, during delivery or by breast feeding.
- Early diagnosis and antiretroviral therapy to mother and infant significantly decrease the rate of intrapartum and perinatal transmission (vertical transmission) of HIV infection.
- *Zidovudine* treatment of HIV infected pregnant women from the beginning of second trimester through delivery and of infant for 6 weeks following birth decreases the rate of transmission from 22.6% to < *5%.*
- *Single dose of nevirapine* given to the mother at the onset of labor followed by a single dose to the newborn within 72 hours of birth decreased transmission by 50%. *This is the prefered regimen now in developing countries.*

240. Which does not act by blocking NMDA receptors?

a) Methoxetamine

b) Methadone

c) Ketamine

d) Diltiazem

Correct Answer - D
Ans. is 'd' i.e., Diltiazem
Drugs acting by blocking NMDA receptors are:
i. *Methoxetamine*
i. Phencyclidine
i. *Methadone*
v. Dizocilpine
v. Felbamate
i. Dextropropoxyphene
i. Acamprost
i. Tramadol
x. Ketamine
x. Pethidine
i. Atomoxetine
i. Nitrous oxide

241. Essential drugs ?

a) Included in national pharmacopoeia

b) Should always be present at PHC

c) Those that satisfy the primary health care needs of the population

d) Life saving medications

Correct Answer - C
Ans. is 'c' i.e., Those that satisfy the primary health care needs of the population

- WHO has defined Essential Medications as those that satisy the priority health care needs of majority of the population.

242. Most common mitochondrial enzyme for metabolism detoxification reaction is ?

a) CYP 3A4

b) CYP 1A2

c) CYP 2A6

d) CYP 2B6

Correct Answer - A

Ans. is 'a' i.e., CYP 3A4

Subtypes of cytochrome P-450

- Depending upon the extent of amino acid sequence homology, the cytochrome P-450 (CYP) isoenzymes are grouped into families designated by capital letters (A, B, C ....).
- Individual isoenzymes are again alloted numerals (1, 2, 3 ....).
- Examples are CYP1A2, 2A6, 2B6, 2C8, 3A4/3A5.
- In human beings, only a few members of three isoenzyme families carry out metabolism of most of the drugs.
- *Cyp 3 A 4/5 carryout biotransformation of largest number (nearly 50%) of drugs.*

Important inducers of CYP 3A4/3A5

- Barbiturates
- Glucocorticoids
- Rifampin
- Macrolide antibiotics
- Carbamazepine
- Phenytoin
- Pioglitazone

243. Nonselective beta adrenergic antagonist is

a) Nodalol

b) Atenolol

c) Bisoprolol

d) Esmolol

Correct Answer - A
Ans. is 'a' i.e., Nodalol

244. Insulin secretion increasing drug by acting on beta cells of pancreas is -

a) Rapaglinide

b) Metformin

c) Poiglitazone

d) Acarbose

Correct Answer - A

Ans. is 'a' i.e., Rapaglinide

Oral hypoglycemic drugs may be divided into two groups.

1. Group 1

These drugs reduce plasma glucose by stimulating insulin production, therefore called *insulin secretogogues.*

Hypoglycemia is a well known side effect.

Examples are:

i) Sulfonylureas: first generation (chlorpropamide, tobutamide); second generation *(Glimipiride,* glyburide, glipizide, gliclazide).

ii) Megalitinnide/D-phenylalanine analogues: Nateglinide, Rapaglinide.

2. Group 2

These drugs reduce blood glucose without stimulating insulin production, therefore are insulin nonsecretogogues.

These durgs do not cuase hypoglycemia when used alone and can cause hypoglycemia, only when used with other oral hypoglycemics.

Examples are:

i) Biguanides: Metformin, Phenformin

ii) Thiazolidinediones: Rosiglitazone, Pioglitazone, Troglitazone.

iii) a - glucosidase inhibitors: Acarbose, miglital.

245. Antihypertensive which can not be given in pregnancy ?

a) Labetolol

b) Propranolol

c) Esmolol

d) Hydralazine

Correct Answer - B
Ans. is 'b' i.e., Propranolol

246. Beta blockers mask all effects of hypoglycemia except ?

a) Sweating

b) Palpitations

c) Dizziness

d) Tremors

Correct Answer - C
Ans. is 'c' i.e., Dizziness
Symptoms of hypoglycemia are attributable to :-
i) Sympathetic stimulation : Sweating, tremor, tachycardia palpitations and anxiety. These are the warning signs.
ii) Cerebral glucose deficiency : Decreased cognitive functions, dizziness and decreased concentration.

- Use of beta-blockers, especially in diabetics who are taking treatment, may mask typical sympathetic system mediated symptoms of hypoglycemia such as *sweating, tremor, tachycardia, and palpitations.*
- Thus, dangerous severe hypoglycemia can occur without any warning signs.

247. Latest oral direct thrombin inhibitor is?

a) Ximelagatran

b) Indraparinux

c) Dabigatran

d) Fondaparinux

Correct Answer - C
Ans. is 'c' i.e., Dabigatran
Ximelagatran was the first oral direct thrombin inhibitor approved; however, it was subsequently withdrawn from the market because of reports of liver failure.
Recently a new oral direct inhibitor, dabigatran, was approved for use in Europe for prevention of various thromboembolism in patients who have undergone hip or knee replacement surgery.

248. Adverse effects of phenytoin include all of the following except?

a) Lymphadenopathy

b) Ataxia

c) Hypercalcemia

d) Hirsutism

Correct Answer - C
Ans. is 'c' i.e., Hypercalcemia

- Phenytoin interferes with calcium metabolism by desensitizing target tissue to vit. D, this causes hypocalcemia (not hypercalcemia).
- At therapeutic level (10-20microg/ml) - Gum hypertrophy, hirsutism, hypersensitivity (rashes, lymphadenopathy, DLE, neutropenia), hyperglycemia due to inhibition of insulin release, megaloblastic anemia, pseudolymphoma, hypocalcemia, Vitamin D deficiency and osteomalacia, and teratogenicity (fetal hydantoin syndrome).
- At toxic level (dose-related) cerebellar syndrome (ataxia, vertigo), falling BP, arrhythmias, drowsiness, mental confusion, Gl symptoms (epigastric pain, nausea, vomiting) and local vascular injury by iv injection.

249. Post marketing surveillance included in which phase of drug clinical trial?

a) I

b) II

c) III

d) IV

Correct Answer - D
Ans. is 'd' i.e., IV
*Surveillance after marketing, i.e. after the drug is out in the market is a part of Phase **IV** of clinical trials. It includes follow-up of patients taking the drug and adverse drug reaction **(ADR)** reporting as well as looking for newer treatment indications*

250. Which of the following is most active against slowly dividing tubercular bacilli ?

a) Isoniazid

b) Rifampicin

c) Streptomycin

d) Ethambutol

Correct Answer - B
Ans. is 'b' i.e., Rifampicin

251. Drug contraindicated in G6PD deficiency?

a) Chloroquine

b) Primaquine

c) Quinine

d) Halofantrine

Correct Answer - A:B:C
Ans. is 'b > c > a' i.e., Primaquine > Quinine > Chloroquine

- Among antimalarial drugs, primaquine, quinine and occasionally chloroquine can cause hemolytic anemia in G6PD deficiency.
- But, primaquine has the highest potential to cause hemolytic anemia in patients with G6PD deficiency and, the patients with G6PD deficiency are highly senstive to primaquine.
- The hemolytic potential in G6PD deficiency patients -

252. Cardiac conduction defect seen with Tricyclic antidepressants are due to ?

a) NE & serotonin uptake inhibitor

b) Antimuscarinic action on heart

c) Only NE uptake inhibition

d) Both NE uptake inhibition and antimuscarinic action on heart

Correct Answer - D

Ans. is 'd' i.e., Both NE uptake inhibition and antimuscarinic action on heart

- The commonest cardiovascular effect of tricyclic antidepressant overdose is sinus tachycardia.
  - Due to inhibition of norepincphrine reuptake and the anticholinergic action.
- However, the most important toxic effect of tricyclics is the slowing of depolarisation of the cardiac action potential by inhibition of the sodium current and this delays propagation of depolarisation through both myocardium and conducting tissue.
  - This results in prolongation of the QRS complex and the PR/QT intervals with a predisposition to cardiac arrhythmias.
  - This inhibition of sodium flux into myocardial cells can occur to such an extent that depressed contractility can result and this, coupled with the reduction in peripheral resistance, contributes to hypotension.

253. At mu receptor, buphrenorphine is?

a) Partial agonist

b) Partial antagonist

c) Complete agonist

d) Complete antagonist

Correct Answer - A
Ans. is 'a' i.e., Partial agonist

254. Remission with SSRI or TCA patient again havingrelapse. There may be deficiency of ?

a) Pyridoxine

b) Cobalamine

c) Ascorbate

d) Retinol

Correct Answer - B
Ans. is `b' i.e., Cobalamine

- Subjects with vitamin B_{12} deficiency and depression may present with history of past episodes with spontaneous
- remission or response to treatment with antidepressants and later recognition or development Budeficiency"
- Studies have found that some people with depression may have low levels of folic acid, vitamin **B_{12}** or vitamin D.

255. Side effect of salmeterol is ?

a) Tremor

b) Seizure

c) Hypertension

d) Hyperkalaemia

Correct Answer - A
Ans. is 'a' i.e., Tremor

- The most common side effects are muscle tremor and palpitation
- **Hypokalemia**
- **Hyperglycemia**
- **Tolerance**
- **Throat irritation**
- **Ankle edema.**
- Other side effects are anxiety, headache, muscle cramps, dry mouth, arrhythmia, flushing (due to vasodilatation), hypoxemia, MI, disturbance of sleep and behavior.

256. Parenteral direct thrombin inhibitor ?

a) Ximelagatran

b) Dabigatran

c) Argatroban

d) Heparin

Correct Answer - C
Ans. is 'c' i.e., Argatroban

Parentral direct thrombin inhibitors

- Argatroban Bivalirudin
- Hirudin Lepirudino Melagatran
- Desirudin

Oral Direct thrombin inhibitors

- Dabigatran (recent)
- Ximelagatran (withdrawn)

257. Increased insulin secretion from beta cells is doneby ?

a) Metformin

b) Pramlidine

c) Repaglinide

d) Pioglitazone

Correct Answer - C

. Ans. is 'c' i.e., Repaglinide

- Oral hypoglycemic drugs may be divided into two groups:?

1. Group 1

- These drugs reduce plasma glucose by stimulating insulin production, therefore called insulin secretogogues.
- Hypoglycemia is a well known side effect.

Examples are:

1. Sulfonylureas: first generation (chlorpropamide, tobutamide); second generation (Glimipiride, glyburide, glipizide, gliclazide).
2. Megalitinnide/D-phenylalanine analogues: Nateglinide, Rapaglinide.

2. Group 2

- These drugs reduce blood glucose without stimulating insulin production, therefore are insulin non-secretogogues.
- These durgs do not cuase hypoglycemia when used alone and can cause hypoglycemia, only when used with other oral hypoglycemics.

Examples are:

1. **Biguanides:** Metformin, Phenformin
2. **Thiazolidinediones:** Rosiglitazone, Pioglitazone, Troglitazone.
3. **a-glucosidase inhibitors:** Acarbose, miglital.

258. Verapamil is used in all, except ?

a) Angina pectoris

b) Atrial fibrillation

c) Ventricular tachycardia

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Ventricular tachycardia

- **Use of Verapamil as an antiarrhythmic**
  - **PSVT**
  - **Angina pectoris —**All CCB's are effective in reducing frequency and severity of classical as well as variant angina. It is beneficial in angina in the following way
  - **Classical angin**a Reduces cardiac work, mainly as a result of reduced afterload.
  - **Variant angina Prevent arterial spasm.**
  - Hypertension
  - Hypertrophic cardiomyopathy
  - Suppress nocturnal leg cramps
  - Migraine

259. High dose of morphine is used without much danger in ?

a) Gall bladder surgery

b) Labour

c) Myocardial infarction

d) Head injury

Correct Answer - C

Ans. is 'c' i.e., Myocardial infarction

- Morphine should be given promptly in myocardial infarction to allay apprehension and reflex sympathetic stimulation.
- Morphine should be used cautiously in gall bladder and biliary tract dysfunction as it causes spasm of sphincter of oddi and can cause acute rise of intrabiliary pressure.
- Used during labour, morphine can cause neonatal respiratory distress.
- Head injury is a contraindication for morphine use.

260. All drugs are available as transdermal patches in India, except

a) Fentanyl

b) Nitroglycerine

c) Hyoscine

d) Nicotine

Correct Answer - C
Ans. is 'c' i.e., Hyoscine
"Transdermal patches ofNTG, fentanyl, nicotine and estradial are available in India, where as those of isosorbide dinitrate, hyoscine and clonidine are marketed elsewhere". — KDT

261. True about sitagliptin is all except

a) Used in type II DM

b) Used in combination with other oral hypoglycaemic

c) Cannot be used orally

d) All are true

Correct Answer - C
Ans. is 'c' i.e., Cannot be used orally
Sitagliptin

- This is *orally active inhibitor of DPP-4.*
- It prevents degradation of endogenous GLP- 1 and other incretins, potentiating their action, resulting in limitation of postprandial hyperglycemia.
- It is used in *type 2 DM.*
- Other DPP-4 inhibitor is **vildagliptin.**

262. Gynaecomastia is caused by which drug ?

a) Spironolactone

b) Rifampicin

c) Thiazide

d) Propanolol

Correct Answer - A
Ans. is 'a' i.e., Spironolactone

263. Mechanism of action of transexaminic acid is

a) Decrease vascular permeability

b) Smooth muscle contraction

c) Activates Plasmin formation

d) Prevents fibrinolysis

Correct Answer - D
Ans. is `d' i.e., Prevents fibrinolysis

264. Spasmolytic analgesic is

a) Dicyclomine

b) Physostigmine

c) Tropicamide

d) None

Correct Answer - A

Ans. is 'a' i.e., Dicyclomine

- Antispasmodic (spasmolytic) drugs are used in various colic (pain) e.g. abdominal colic or renal colic.
- Among the given options, dicyclomine is spasmolytic.

<u>Antispasmodic drugs</u>

1. Quaternary compounds - Propantheline, Oxyphenonium, CI idinium, Pipenzolate, Methylbromide, Isopropamide, Glycopyrrolate.
2. Tertiary amines - Dicyclomine, Valethamate, Pirenzepine.
3. Vasoselective antispasmodic (drugs acting on urinary bladder) - Oxybutynin, Tolterodine, flavoxate. Drotaverine

265. Muscarinic cholinergic receptors are seen at allsites, except ?

a) Stomach

b) CNS

c) Neuromuscular junctio

d) Glands

Correct Answer - C
Ans. is 'c' i.e., Neuromuscular junction
Cholinergic receptors

- There are two types of cholinergic receptors :
- Muscarinic → Found at - All postaganglionic parasympathetic sites, Few postaganglionic sympathetic sites (sweat gland & blood vessels), CNS.
- Nicotinic —4 Found at - Ganglia (both sympathetic and parasympathetic), Skeletal muscles, Adrenal medulla, CNS

Muscarinic receptors		Nicotinic receptors	
Type	Organ	Type	Organ
M_1	Gastric gland	N_M	Neuromuscualr junction
M_2	Heart		(Skeletal muscle)
M_3	Smooth muscles, glands and endothelium	N_N	Ganglia, adrenal medulla
M4	CNS		
M_5	CNS		

266. Maximum effect of bronchodilatation in asthma is caused by ?

a) Corticosteroids

b) Theophylline

c) Anticholinergic

d) β2-Agonist)

Correct Answer - D
Ans. is 'd' i.e., **β_2**-Agonist

β-agonists **in Asthma**

- Bronchi have , **β**-adrenergic receptors which cause bronchodilatation → So, the adrenergic drugs used in asthma are selective **β_2** agonists.
- **β**-agonists are the most effective bronchodilators
- **β_2**-agonists have some other effects also on airways (other than bonrchodilatation), that are responsible for beneficial effects in asthma :
  - Inhibition of release of mast cells mediators → mast cells stabilizing action.
  - Inhibition of exudation and airway edema.
  - Increased mucociliary clearance
  - Decreased cough
- **β_2**-agonists have no effect on inflammation→ no antiinflammatory action.

267. Sedative with GABA facilitating action but without anticonvulsant and muscle relaxant properties and no effect on sleep ?

a) Diazepam

b) Zolpidem

c) Phenobarbitone

d) Buspirone

Correct Answer - B
Ans. is 'b' i.e., Zolpidem
Among the given options, three are sedative-hypnotic with GABA facilitatory action -

- Diazepam (a benzodiazepine) → But it also has anticonvulsant and muscle relaxant property. it) Phenobarbitone → But it has anticonvulsant property.
- Zolpidem
  - Has no anticonvulsant and muscle relaxant property and have no effect on sleep architecture. Zolpidem
  - Zolpidem is a non-benzodiazepine hypnotic.
  - Minimal suppressive effect on REM sleep architecture is not disturbed.

268. Advantages of amoxicillin over ampicillin are all except ?

a) Better bioavailability & faster action

b) Spectrum includes H. influenzae & Shigella

c) Incidence of diarrhea is lower

d) Food does not interfere with its absorption

Correct Answer - B

Ans. is 'b' i.e., Spectrum includes **H.** influenzae & Shigella

- Amoxicillin is a close congener of ampicillin; similar to it in all respects except :
  - Oral absorption is better; food does not interfere with absorption; higher and more sustained blood levels are produced.
  - Incidence of diarrhea is lower.
  - It is less active against Shigella and H. influenzae.
- It is now preferred over ampicillin for bronchitis, urinary infections, SABE andgonorrhoea.

269. Visual field monitoring is important before starting?

a) Vigabatrin

b) Topiramate

c) Valproic acid

d) Carbamazepine

Correct Answer - A
Ans. is 'a' i.e., Vigabatrin

270. Lithium directly affects which ion ?

a) Sodium

b) Potassium

c) Magnesium

d) Calcium

Correct Answer - A

Ans. is 'a' i.e., Sodium

- Diuretics (particularly thiazides) decrease the renal excretion of lithium and thus may result in toxicity. This is due to increased reabsorption of Na' and lithium ions (as a compensatory response to excessive loss of Nat).

Interactions of lithium

1. Diuretics (thiazide, furosemide) by causing Na+ loss promote proximal tubular reabsorption of Na+ as well as Li → Plasma level of lithium rises.
2. Tetracyclines, NSAIDs and ACE inhibitors cause lithium retention.
3. Lithium tends to enhance insulin/sulphonylurea induced hypoglycemia (lithium has insulin like action on glucose metabolism).
4. Lithium inhibits the action of ADH on distal tubules causes nephrogenic DI.
5. Lithium reduce thyroxine synthesis by interfering iodination of tyrosine.

271. Abatacept is ?

a) TNF alpha inhibitor

b) Inhibitor of co-stimulation of T cells

c) IL-1 receptor antagonist

d) Monoclonal antibody against IL-6 receptor

Correct Answer - B
Ans. is 'b' i.e., Inhibitor of co-stimulation of T cells
T-cell costimulatory blockers
Abatacept

- **It** is a fusion protein that combines the extracellular domain of the molecule CTLA4 (CD 154) with the Fc portion of a human immunoglobulin.
- It interferes with the interactions between antigen presenting cells and T lymphocytes. Therefore, it affects early stages in the pathogenic cascade of event in RA.
- CTLA4 has high affinity for CD 28 when abatacept binds to CD28 on T cell surface, it prevents the second signal from being delivered, thus turning down the T cell response.
- Additional effects are decreasing the production of T cell-derived cytokines including TNF.

272. All of the following are therapeutic uses of penicillin G, except

a) Bacterial meningitis

b) Rickettsial infection

c) Syphilis

d) Anthrax

Correct Answer - B
Ans. is 'b' i.e., Rickettsial infection
Penicillin G *is* the DOC for

1. Meningococcal meningitis
2. Bacillus anthracis (anthrax)
3. Clostridium perfringens (gas gangrene)
4. Clostridium tetani (tetanus)
5. Corynebacterium diphtheriae
6. Treponema pallidum (syphilis)
7. Leptospira
8. Actinomyces israelii (Actinomycosis)
9. Borrel i a burgdorferi (Lyme disease)
10. Enterococci
11. Streptococci
12. Susceptible pneumococci

273. Which of the following is associated with hemorrhagic stroke ?

a) Phenylpropanolamine

b) Terfenadine

c) Quinidine

d) Fenfluramine

Correct Answer - A
Ans. is 'a' i.e., Phenylpropanolamine
.. Many reports associating phenylpropanolamine use for weight loss with haemorrhagic stroke among women, appeared in U.S.A.

274. Aminophylline inhibits which enzyme ?

a) MAO

b) Alcohol dehydrogenase

c) Phosphodieseterase

d) Cytochrome P450

Correct Answer - C
Ans. is 'c' i.e., Phosphodiesterase

275. All are side effects of Clozapine, except ?

a) Granulocytopenia

b) Seizures

c) Sedation

d) Extrapyramidal side effects

Correct Answer - D
Ans. is 'd' i.e., Extrapyramidal side effects
Side effects of clozapine

- Agranulocytosis
- Unstable BP & Tachycardia
- Worsening of diabetes
- Seisures
- Urinary incontinence
- Hypersalivation (sialorrhoea)
- Weight gain
- Sedation

276. Most common side effect of haloperidol ?

a) Hypotension

b) Akathasia

c) Dryness of mouth

d) Tic disorder

Correct Answer - B
Ans. is 'b' i.e., Akathasia

- 75% of patients experience extrapyramidal symptoms (Akathisia, Parkinsonism, acute muscular dystonia) with all classical (typical) antipsychotics.
- Haloperidol is a typical antipsychotic.

277. Maximum tachycardia is seen with

a) Nifedipine

b) Verapamil

c) Propanolol

d) Amlodipine

Correct Answer - A
Ans. is 'a' i.e., Nifedipine

278. Elimination after 4 half lives in first order Kinetics is

a) 84%

b) 93%

c) 80.5%

d) 4.75%

Correct Answer - B
Ans. is 'b' i.e., 93%

Half life	**Elimination**
1t%2	50%
2t'/2	75%
3 0/2	87.5%
41	*93.75%*
5 t'/	96.875

279. Not true about hypolipidemic drugs

a) Cholesterol reducing drugs are contraindicated in child less than 8 years

b) Gemfibrozil causes myopathy

c) Gemfibrozil can increase myopathy caused by statins

d) Lovastatin can cause hepatic dysfunction

Correct Answer - A
Ans. is 'a' i.e., Cholesterol-reducing drugs are contraindicated in child less than 8 years

- Contraindication for uses of statins (cholesterol-reducing drugs) are -
  - Pregnancy
  - Breastfeeding
  - Active liver disease
- Gemfibrozil can cause myopathy and it can aggravate myopathy caused by statins.
- Lovastatin can cause hepatic dysfunction.

280. Mechanism of action of aminoglycosides is ?

a) Inhibition of protein synthesis

b) Image to cell membrane

c) Coagulation of proteins

d) Inhibition of cell wall synthesis

Correct Answer - A
Ans. is 'a' i.e., Inhibition of protein synthesis

281. Botulinum toxin acts on

a) Synapse

b) Smooth muscle of intestine

c) Central nervous system

d) Sensory nerves

Correct Answer - A
Ans. is 'a' i.e., Synapse

- Botulinum toxin affects
1. Neuromuscular junction.
2. Postganglionic parasympathetic nerve endings.
3. Peripheral ganglia.

- Central nervous system is not involved and there is no sensory involvement.
- Botulinum toxin acts by inhibiting the calcium mediated exocytosis of ACh from the vesicles in the synapse.

282. Botulinum toxin type B is used in which disease ?

a) Glabellar lines

b) Strabismus

c) Cervical dystonia

d) Blepharospasm

Correct Answer - C
Ans. is 'c' i.e., Cervical dystonia

283. All are used for carcinoma head & neck except ?

a) 5FU

b) Busulfan

c) Cisplatin

d) Methotrexate

Correct Answer - B
Ans. is 'b' i.e., Busulfan

284. Alcohol mainly increases -

a) TG

b) LDL

c) VLDL

d) HDL

Correct Answer - D
Ans. is 'd' i.e., **HDL**

- Regular intake of small to moderate amounts of alcohol (1-2 drinks)has been found to raise HDL cholesterol levels and decrease LDL oxidation. This may be responsible for 15 - 35% lower incidence of coronary artery disease in such individuals. Risk reduction is greatest in high risk subjects and the protection is lost if >/= 3 drinks are consumed daily.

285. First generation cephalosporins are active against?

a) Gram negative bacteria

b) Gram positive bacteria

c) Anaerobes

d) Dermatophytes

Correct Answer - B
Ans. is 'b' i.e., Gram positive bacteria

286. All are true about nitrous oxide except ?

a) Laughing gas

b) Causes megaloblastic anemia

c) Causes diffusion hypoxia

d) Good muscle relaxant

Correct Answer - D

Ans. is 'd' i.e., Good muscle relaxant

Nitrous oxide N,O

- It is also called laughing gas.
- It has good analgesic but poor muscle relaxant activity.
- Second gas effect and diffusion hypoxia occur with N_20 only.
- N_20 is the only anaesthetic reported to produce hematologic toxicity and neurotoxicity with long term administration.
- Both toxicities are the result of the interaction of N_20 with vit B12.

287. Which of the following is given orally

a) Argatraban

b) Alteplase

c) Rivaroxaban

d) Fondaparinux

Correct Answer - C
Ans. is 'c' i.e., Rivaroxaban

- Rivaroxaban - it is an orally active direct inhibitor of activated factor Xa which has become available for prophylaxis and treatment of DVT.
- Alteplase - given by i.v. infusion due to short half life of 4 - 8 min and often requires heparin coadministration.
- Argatroban - direct thrombin inhibitor; given by i.v. infusion; used in place of lepirudin for short term indications in patients with heparin induced thrombocytopenia.
- Fondaparinux - 100% bioavailability with subcutaneous injection

288. The best drug for control of esophageal bleeding is?

a) Vasopressin

b) Octreotide

c) GnRH

d) Propranolol

Correct Answer - A
Ans. is 'a' i.e., Vasopressin

- Terlipressin (analogue of vesopressin) is considered the vasoactive agent of choice for acute variceal bleeding.
- Other drugs used are somatostatin and its analog octeride.

289. Short acting glucocorticoid is ?

a) Fludrocortisones

b) Dexamethasone

c) Hydrocortisone

d) Aldostrone

Correct Answer - C
Ans. is 'c' i.e., Hydrocortisone

- **Short-acting:**
  - **Cortisol**
  - **8-12 hours**
- Intermediate-acting:
  - Prednisolone
  - 18-36 hours
- Long-acting:
  - 36-54 hours

290. The best agent for increasing HDL cholesterol is ?

a) Statin

b) Nicotinic acid

c) Gugulipids

d) Fibrates

Correct Answer - B

Ans. is'b' i.e., Nicotinic acid

Nicotinic acid (Niacin)

- There are three main type of lipases related to metabolism of lipoproteins ?
1. Lipoprotein lipase→ Present in blood vessels and causes hydrolysis of tryglyceride content of VLDL and chylomicrones.
2. Hepatic lipase → Converts IDL to LDL by hydrolysing the triglyceride content of IDL.
3. Hormone sensitive lipase → Present intracellularly in peripheral tissue and causes intracellular lipolysis by hydrolysing triglycerides.

- Niacin (Nicotinic acid) inhibits intracellular lipolysis by inhibiting hormone sensitive lipase→ intracellular FFA to liver→ triglyceride synthesis.
- Niacin also increases the activity of lipoprotein lipase→ T hydrolysis of VLDL triglyceride.
- Nicotinic acid also reduces the production of VLDL in liver by inhibiting TG-synthesis → indirectly the VLDL degradation products IDL and LDL are also reduced.
- Nicotinic acid is the most effective drug to raise HDL-CH.
- Increased HDL is due to interference of direct pathway of HDL cholesterol to liver which involves apo-A,→ Niacin decreases apo-A,

mediated hepatic clearance.

- Nicotinic acid is used in type I, III, IV & V hyperlipoproteinemias.

291. All of the following are adverse effects of nicotinic acid except ?

a) Vasodilation

b) Pancreatitis

c) Liver dysfunction

d) Hyperpigmentation

Correct Answer - B
Ans. is 'b' i.e., Pancreatitis
Adverse effects of nicotine

- Adverse effects → 1) Marked flushing, itching (pruritis) and heat due to cutaneous vasodilatation, 2) Dyspepsia, vomiting and diarrhoea, 3) Liver dysfunction, 4) Hyperpigmentation and dryness of skin, 5) Hyperglycemia and hyperuricemia.
- The cutaneous effects of nicotinic acid include flushing and pruritis of face and upper trunk, skin rashes and acanthosis nigricans. These symptoms are due to vasodilatory action of niacin through release of PGs and can be prevented by pretreatment with aspirin.

292. Not a hepatotoxic drug ?

a) Chlorpropamide

b) Allopurinol

c) Streptomycin

d) Halothane

Correct Answer - C
Ans. is 'c' i.e., Streptomycin

293. Which drug can be given subdermally ?

a) Nicotine

b) Fentanyl

c) GTN

d) Progesterone

Correct Answer - D
Ans. is **'d' i.e.,** Progesterone

- Progesterone can be given in the form of subdermal implant.
- Subdermal contraceptive implants involve the delivery of a steroid progestin from polymer capsules or rods placed under the skin.
- The hormone diffuses out slowly at a stable rate, providing contraceptive effectiveness for 1-5 years.

294. Botulinum toxin mimics -

a) Cholinergics

b) Anticholinergics

c) Adrenergics

d) Antiadrenergic

Correct Answer - B
Ans. is 'b' i.e., Anticholinergics

295. Dopamine receptor with inhibitory action ?

a) D_5

b) Di

c) D_2

d) None

Correct Answer - C
Ans. is 'c' i.e., **D2**

- Two types of dopamine receptors (D I , D2) were originally described. Three more (D3, D4, D5) have now been identified and cloned. All are G protein coupled receptors and are grouped into two families:
- Dl like: (Dl, D5) are excitatory
- D2 like: (D2,3,4) are inhibitory

296. Thiazolidinedione is associated with increasedrisk of?

a) Heart failure

b) Pulmonary fibrosis

c) Myocarditis

d) renal dysfunction

Correct Answer - A
Ans. is 'a' i.e., Heart failure
Thiazolidinediones
adverse effects

- Plasma volume expansion, edema, weight gain, headache, myalgia and mild anemia.
- Few cases of hepatic dysfunction and some cardiovascular events have been reported - CHF may be precipitated → they are contraindicated in liver disease and in CHF.
- Rosiglitazone has been found to increase the risk of fracture, especially in elderly women.
- Glitazones with insulin can precipitate CHF → avoid such combination.
- These drugs prevent type 2 DM in prediabetics.

297. Mechanism of Action of clofibrate ?

a) They increase lipoprotein lipase activity through PPAR alpha and cause increased lipolysis of triglycerides

b) Inhibits lipolysis in adipose tissue

c) Inhibits HMG CoA reductase

d) Bind bile acids and bile salts in small intestine

Correct Answer - A

Ans. is 'a' i.e., They increase lipoprotein lipase activity through PPAR alpha and cause increased lipolysis of triglycerides

- Fibrates act by transcriptionally upregulating LPL, apo A-I and apo A-1 I, and down regulate apo CIII, an inhibitor of lipolysis by activating a nuclear receptor, PPAR alpha (peroxisome proliferator activated receptor alpha). o Major effect of the fibrates is to ?

1. Increased oxidation of fatty acids in liver and striated muscle
2. Increased lipolysis of lipoprotein triglyceride via LPL.
3. Reduce TG (contained in VLDL) reduced VLDL secretion by liver.
4. Increase HDL

298. Which of the following is a mineralocorticoid antagonist ?

a) Spironolactone

b) Inamrinone

c) Nicorandil

d) Ketorolac

Correct Answer - A
Ans. is 'a' i.e., Spironolactone

299. Beta 2 agonist used in rescue therapy in acute respiratory conditions are all except -

a) Terbutaline

b) Salbutamol

c) Bambuterol

d) Ketotifen

Correct Answer - D
Ans. is 'd' i.e., Ketotifen

300. Beta 1 antagonist used in congestive cardiac failure ?

a) Atenolol

b) Metoprolol

c) Salbutamol

d) Terbutaline

Correct Answer - B
Ans. is `b' i.e., Metoprolol
β-blockers used in CHF
Cardioselective **β**-blockers (**β**1-blockers)

Atenolol	Bisoprolol	Celiprolol	Esmolol
Metoprolol	Nebivolol	Acebutalol	Betoxalol
Non-selective	blocker with a-blocking acting		
Carvedilol	Dilovalol	Medroxalol	Bucindolol
Labetalol	Bevantolol	Nipradilol	

- Among all these following three are used most commonly
1. Carvedilol
2. Metoprolol
3. Bisoprolol

301. NSAIDS cause gastric ulcer because ?

a) They inhibit COX - 2 enzyme

b) They inhibit mucus production

c) They increase HCI production

d) They delay gastric emptying

Correct Answer - B
Ans. is 'b' i.e., They inhibit mucus production

- Prostaglandins function as natural ulcer protectives by enhancing gastric mucus and HCO3- production, as well as by improving mucosal circulation and health. The ulcerogenic action of NSAIDs may be due to loss of this protective influence.
- PGE analogues are cytoprotective at low doses and inhibit gastric acid secretion at higher doses. NSAIDs inhibit prostaglandin secretion and thus antagonizes its cytoprotective effect.
- Misoprostol is used in NSAIDs induced ulcers.

302. Anandamide is ?

a) Opioid

b) CK 1 antagonist

c) D2 blocker

d) Cannabinoid neurotransmitter

Correct Answer - D
Ans. is 'd' i.e., Cannabinoid neurotransmitter

- Anandamide, also known as N-arachidonoylethanolamine or AEA, is an endogenous cannabinoid neurotransmitter.
- The name is taken from the Sanskrit word *Ananda,* which means "bliss, delight", and amide.
- It is synthesized from N-arachidonoyl phosphatidylethanolamine by multiple pathways.
- It is degraded primarily by the fatty acid amide hydrolase (FAAH) enzyme, which converts anandamide into ethanolamine and arachidonic acid.
- As such, inhibitors of FAAH lead to elevated anandamide levels and are being pursued for therapeutic use.

303. Metformin is used in treatment & control of ?

a) Diabetes

b) PCOD

c) Pregnancy induced hypertension

d) Both a and b

Correct Answer - D
Ans. is 'd'i.e., Both a and b
Biguanides *acts* by :

- Suppress hepatic gluconeogenesis and glucose output from liver major action.
- Enhance insulin mediated glucose disposal in muscle and fat (Increased peripheral utilization of glucose) by enhancing GLUT-1 transport from intracellular site to plasma membrane.
- Retartd intestinal absorption of glucose.
- Promote peripheral glucose utilization by enhancing anaerobic glycolysis.

Also know

- Beside DM, *metformin* is also useful in *polycystic ovarian disease.*
- Metformin is the only oral hypoglycemic that reduces macrovascular events in type 2 DM.
- Metoformin is one of only two oral antidiabetics in the WHO model list of essential medicines (the other being glibenclamide).

304. Hydroxyethyl starch is a ?

a) Vasodilator

b) Inotrope

c) Plasma expander

d) Diuretic

Correct Answer - C
Ans. is 'c' i.e., Plasma expander
Plasma expanders

- These are high molecular weight substances which exerts colloidal osmotic (oncotic) pressure, and when infused i.v. retain fluid in the vascular compartment.
- Human plasma or reconstituted huma albumin are the best, However, the former carries the risk of transmitting serum hepatitis, AIDS, and latter is expensive. Therefore synthetic colloids are more often used.
- Desirable properties of plasma expander are :

1. Should exert oncotic pressure comparable to plasma.
2. Should remain in circulation and not leak out in tissues, or be too rapidly disposed.
3. Should be pharmacodynamically inert.

305. Drug that binds bile acids in the intestine and prevents their return to liver via the enterohepatic circulation is?

a) Niacin

b) Fenofibrate

c) Cholestyramine

d) Gugulipid

Correct Answer - C
Ans. is 'c' i.e., Cholestyramine

306. Sublingual nitroglycerin for treatment of acutechest pain can cause ?

a) Hypertension

b) Headache

c) Bradycardia

d) Sexual dysfunction

Correct Answer - B

Ans. is 'b' i.e., Headache

- Due to vasodilatation there may be tachycardia, palpitation, flushing, headache, dizziness and fainting may occur.

Adverse effects

- Due to vasodilatation tachycardia, palpitation, flushing, headache, dizziness and fainting may occur.
- Rashes are common particularly with pentaerythritol tetranitrate.
- Methemoglobinemia.
- Sildenafil causes dangerous potentiation of nitrate action (cGMP is increased by nitrates and its breakdown by phosphodiesterase is inhibited by sildenafil → marked accumulation of cGMP) - severe hypotension, MI and death may occur the only contraindications of nitrates use are hypotension or simultaneous use of sildenofil.

307. Raltegravir can cause ?

a) Hypokalemia

b) Hypocalcemia

c) Hyperkalemia

d) Hypercalcemia

Correct Answer - C
Ans. is 'c' i.e., Hyperkalemia
1. Myopathy (muscle pain, tiredness) and rhabdomyolysis.
2. Skin reactions.
3. Allergic reactions.
4. Liver problems.
5. Immune reconstitution inflammatory syndrome (IRIS).
6. Nonspecific : nausea, vomiting, diarrhea, headache.

- No textbook has mentioned any electrolyte abnormality as a side effect of raltegravir.
- So, I had to find the answer of this question indirectly.
- Raltegravir can cause rhabdomyolysis, in which there is hyperkalemia.

308. Type II paralysis in organophosphorous poisoning treatment is ?

a) Atropine

b) Oximes

c) Symptomatic treatment

d) No treatment

Correct Answer - C

Ans. is 'c' i.e., Symptomatic treatment

- Paralysis due to organophosphate (OP) poisoning can be three types ?

1. Type I (cholinergic phase)

- Treatment of choice is atropine with or without oximes.

2. Type II

- It is also called as intermediate syndrome.
- It develops 1-4 days after resolution of acute cholinergic symptoms.
- It is manifested as paralysis and respiratory distress.
- It involves proximal muscles with relative sparing of distal muscle groups.
- The pathogenesis presumed to be dysfunction of neuromuscular junction caused by downregulation of presynaptic and postsynaptic nicotinic receptors due to release of excessive Ach and Ca' respectively.
- Atropine is ineffective, symptomatic treatment is given.

3. Type III

309. Which anticancer drug prevents spindle formation?

a) Busulfan

b) Vinca alkaloids

c) 5 - FU

d) Methotrexate

Correct Answer - B

Ans. is 'b' i.e., Vinca alkaloids

- *Taxanes (Paclitaxel and Docetaxel) enhances* polymerization of tubulin (a mechanism opposite to that of vincaalkaloids) →the microtubules are stabilized and their depolymerization is prevented.
- *Vinca alkaloids* (vincristine, vinblastine)prevent polymerization and assembly of microtubules.

Mitotic inhibitors

Enhances polymerization	Preventpolymerization
Taxanes	Vinca alkaloids

310. Which is a GABA transaminase inhibitor ?

a) TCA

b) Sertaline

c) Valproate

d) Gabpentin

Correct Answer - C
Ans. is 'c' i.e., Valproate
Mechanism of action
Facilitation of GABA mediated C1 channel opening

- Barbiturates and benzodiazepines bind to $GABA_A$receptor and open Cl- channel.
- Valprote and vigabatrine inhibit enzyme GABA transaminase which degrades GABA r conc. of GABA.
- Tiagabine inhibits the uptake of GABA into the neurones by inhibiting GAT-1.
- Gabapentine enhances the GABA release from synaptic vesicles.

311. Which of the following is an antipsychotic drug ?

a) Flupenthixol

b) Rasagiline

c) Clobazam

d) Divalproex

Correct Answer - A
Ans. is 'a' i.e., Flupenthixol
Antipsychotics (Neuroleptics)

- Antipsychotics are a group of psychoactive drugs commonly used to treat psychosis, e.g. *Schizophrenia.*
- Antipsychotic drugs are divided into:
- Typical antipsychotics (first generation antipsychotics)

1. Phenothiazines - Chlorpromazine, Thioridazine, Trifluperazine, Fluphenazine.
2. Thioxanthenes - Thiothixene, Flupenthixol.
3. Butyrophenones - Haloperidol, Trifluperidol, Penfluridol.
4. Other heterocyclics - Pimozide, Loxapine, Sulpiride

B) Atypical

- antipsychotics (second generation antipsychotics)

1. Clozopine 3. Olanzopine 5. Aripiprazole
2. Risperidon 4. Quetiapine 6. Ziprasidone

312. Which of the following is a TCA ?

a) Amoxapin

b) Citalopram

c) Venlafaxine

d) Bupropion

Correct Answer - A
Ans. is 'a' i.e., Amoxapine
<u>Antidepressants</u>
A. Typical

- Tricyclic antidepres*sants*
- NA + 5HT reuptake inhibitors :- Imipramine, Trimipramine, Amitriptyline, Clomipramine.
- Predominantly NA reuptake inhibitors :- Desipramine, Nortriptyline, Amoxapine, Reboxetine. b)Selective serotonin reuptake inhibitors :- Fluoxetine, Paroxetine, Sertaline, Citalopram, Scitalopram.

B . Atypical :- Trazodone, Mianserine, Mitrazapine, *Venalafaxin,* Duloxetine, Tianeptine, Amineptine, *Bupropion.*
C. MAO inhibitors :- Tranylcypramine, Meclobemide, Clorgyline.

313. All have high first pass metabolism except ?

a) Lidocaine

b) Propranolol

c) Theophylline

d) Morphine

Correct Answer - C
Ans. is 'c' i.e., Theophylline

314. Drug used for sympathectomy in experimental animals is ?

a) Guanethidine

b) Atropine

c) Diazoxide

d) Thebaine

Correct Answer - A
Ans. is 'a' i.e., Guanethidine

- Guanethidine is used for experimental sympthectomy.
- Guanethidine a polar guanidine compound which is taken up into adrenergic nerve endings by active amine transport and has three important facets of action :
- Displaces NA from storage granules stochiometrically.
- Inhibits nerve impulse coupled release of NA
- Engages and blocks NA uptake mechanism at the axonal membrane.
- It was used for sympathectomy in experimental animal.

315. Gp2b3A inhibitors are all except ?

a) Abciximab

b) Eptifibatide

c) Tirofiban

d) Prasugrel

Correct Answer - D
Ans. is 'd' i.e., Prasugrel
Glycoproteins lib / 111a inhibitors

- The platelet glycoprotein mediates platelet aggregation via binding of adhesive proteins such as fibrinogen and Von Willebrand factor.
- GP IIb / Ina inhibitors, inhibit platelet aggregation by blocking GPIIb / Ma.
- They are more complete inhibitors than either aspirin or clopidogrel / ticlopidinejj because they inhibit final pathway in platelet aggregation (whether it is mediated by ADP or TXA_2), while aspirin blocks only TXA2 pathway and clopidogrel blocks only ADP pathway.
- Drugs are ?

1. Abciximab → A humanized monoclonal antibody against GP IIb / 111a.
2. Eptifibatide
3. Tirofiban → Competitive inhibitors of GP I1b/IIIa
4. Lamifiban

- In addition to inhibiting Gp lib / Ilia receptor, abciximab also inhibits a_yP_3 receptor (which binds vitronectin) and a_13_2 (a leukocyte integerin). This action is responsible for anti-inflammatory and antiproliferative properties of abciximab.

316. Mode of excretion of cyclophosphamide is ?

a) Lung

b) Liver

c) Kidney

d) Skin

Correct Answer - C
Ans. is 'c' i.e., Kidney

- Cyclophosphomide is primarily metabolized (80%) and metabolites are excerted in urine.
- 10 to 20% is excreted unchanged in urine and 4% is excreted in bile.

317. Which of the following is not a cardioselective beta blocker ?

a) Nebivolol

b) Atenolol

c) Betaxolol

d) Oxprenolol

Correct Answer - D
Ans. is 'd' i.e., Oxprenolol

318. Erlotinib is used in ?

a) Colon cancer

b) Pancreatic cancer

c) Gall bladder cancer

d) GIST

Correct Answer - B
Ans. is 'b' i.e., Pancreatic cancer

319. True about lamotrigene ?

a) Decreased efficacy in depression

b) First choice in absence seizure

c) t1/2 is 24 hrs

d) Not metabolised in liver

Correct Answer - C
Ans. is 'c' i.e., t1/2 is 24 hrs

320. Warfarin acts by

a) Inhibition of Vitamin K epoxide reductase

b) Inhibition of gamma glutamyl carboxylase

c) Activation of Vitamin K epoxide reductase

d) Activation of gamma glutamyl carboxylase

Correct Answer - A
Ans. is 'a' i.e., Inhibition of Vitamin K epoxide reductase

321. Side effect of topiramate is ?

a) Weight loss

b) Visual impairment

c) Insomnia

d) Hemolysis

Correct Answer - A
Ans. 'a' i.e., Weight loss
Topiramate

- Weak carbonic anhydrase inhibitor with broad-spectrum anticonvulsant activity.
- Acts via - prolongation of Na+ channel inactivation, GABA potentiation, glutamate receptor antagonism, neuronal hyperpolarisation via K+ channels.
- Used in SPS, CPS, GTCS, myoclonic epilepsy, prophylaxis of migraine.
- Readily absorbed orally and mainly excreted in the urine.
- T1/2 - 24hrs.
- Adverse effects impairment of attention, sedation, ataxia, word-finding difficulties, poor memory, *weight loss,* paresthesias, and renal stones.

322. Prodrug of cetrizine is

a) Foxefenadone

b) Terfenadine

c) Hydroxyzine

d) Azelastine

Correct Answer - C

Ans. is 'C' i.e., Hydroxyzine

- Cetrizine is a metabolite of Hydroxyzine with a marked affinity for peripheral H1 receptors; penetrates the brain poorly.
- It inhibits the release of histamine and of cytotoxic mediators from platelets as well as eosinophil chemotaxis during the secondary phase of allergic response.
- It is indicated in upper respiratory allergies, pollinosis, urticaria, and atopic dermatitis; also used as an adjuvant in seasonal asthma.

323. Which of the following is a tricyclic antidepressant?

a) Vanalafexine

b) Fluoxetine

c) Doxepine

d) Citalopram

Correct Answer - C
Ans. is 'c' i.e., Doxepine

324. Tetracycline injection causes palsy of which nerve?

a) Ulnar

b) Median

c) Radial

d) Superficial Radial Nerve injury

Correct Answer - C
Ans. is 'c' i.e., Radial

325. Drug of choice for reversal of muscle relaxant after anaerthesia

a) Pralidoxine

b) Neostigmine

c) Atropine

d) None

Correct Answer - B
Ans. is 'b' i.e., Neostigmine
Reversal of neuromuscular block

- Nondepolarising muscle relaxants have antagonistic action on acetylcholine
- Anticholinesterases act by inhibiting the action of acetylcholinesterase (an enzyme that degrades acetylcholine by causing its hydrolysis).
- Anticholinesterases thus increase the level of acetylcholine at the neuromuscular junction.
- Neostigmine also has some *additional direct action* on cholinergic receptors i.e., it depolarizes motor end plate.
- It does not increase the release of ACH. Accumulated ACH acts on prejunctional muscarinic autoreceptors and inhibits the release of ACH.

326. Drug of choice for classical angina attack ?

a) CCBs

b) β-blocker

c) GTN

d) Prazocin

Correct Answer - C
Ans. is 'c' i.e., GTN

- For immediate pre-exertional prophylaxis and acute attack
- Sublingual glyceral trinitrate (Drug of choice)

327. Beta2-agonist cause all except

a) Hyperkalemia

b) Hyperglycemia

c) Tremer

d) Palpitaion

Correct Answer - A
Ans. is 'a' i.e., Hyperkalemia
Adverse effects of inhalational agonists

- The most common side effects are muscle tremor and palpitation
- Hypokalemia
- Hyperglycemia
- Tolerance
- Throat irritation
- Ankle edema
- Other side effects are anxiety, headache, muscle cramps, dry mouth, arrhythmia, flushing (due to vasodilatation), hypoxemia, MI, disturbance of sleep and behaviour.

328. Mechanism of action of prophylthiouracil ?

a) Prevents synthesis of thyroglobulin

b) Prevents iodine trapping

c) Prevents release of **T_4 & T3**

d) Inhibits coupling

Correct Answer - D
Ans. is 'd' i.e., Inhibits coupling

329. Not true about aztreonam ?

a) f3-lactarn

b) Monobactarn

c) Active against pseudomonas

d) Shows cross reactivity with other penicillins

Correct Answer - D
Ans. is 'd' i.e., Shows cross reactivity with other penicillins
Aztreonam

- It belongs to monobactams group of 13-lactam antibiotics.
- It is active against gram negative organisms including pseudomonas, but has no activity against gram positive organisms or anaerobes fi-lactam antibiotic with aminoglycosides spectrum.
- It is the only fi-lactam antibiotic that lack cross-reactivity with other P-lactam antibiotics, permiting its used in patients allergic to penicillins or cephalosporins.

330. Clinical effect of vitamin D is reduced by ?

a) Simultaneous ingestion of phytates

b) Simultaneous ingestion of lactose

c) Acidic environment

d) None

Correct Answer - A

Ans. is 'a' i.e., Simultoneous ingestion of phytates

- The main clinical effect of vitamin D is to enhance intestinal absorption of calcium.
- With an average intake of 1000 mg of calcium its net intestinal absorption is only 150-250 mg/day.
- Calcium is absorbed mainly in the duodenum and jejunum (proximal intestine) by an active transport mechanism regulated by 1, 25 $(OH)_2$ D, (calcitriol).
- Parathormone indirectly promotes absorption of calcium by increasing the renal synthesis of 1, 25 $(OH)_2$ D3.
- Dietary lactose, proteins and an acidic environment promote calcium absorption.
- On the other hand, phytates, phosphates, oxalates, tetracycline and and alkaline environment impair calcium absorption.

331. All are produced by la receptors except -

a) Euphoria

b) Sedation

c) Dysphoria

d) Constipation

Correct Answer - C
Ans. is 'c' i.e., Dysphoria

332. Antitussive opioid is ?

a) Ethylmorphin

b) Pethidine

c) Methadone

d) Buprenorphine

Correct Answer - A
Ans. is 'a' i.e., Ethylmorphine
Antitussives (cough center suppressants)

- Opioids : Codeine, ethylmorphine, pholcodeine.
- Non-opioids : Noscapine, dextro methorphan, chlophedianol.
- Antihistaminics : Chlorpheniramine, diphenhydromine, promethazine.
- Peripherally active : Prenoxdiazine.

333. Sugamadex is used for ?

a) Organophosphate poisoning

b) Reversal of NM blockers

c) Treatment of local anaesthetic poisoning

d) Treatment of central anticholinergic syndrome

Correct Answer - B
Ans. is 'b' i.e., Reversal of NM blockers

- Sugamadex is a novel reversing agent developed for terminating the action of nondepolarizing muscle relaxants *rocuronium and vecuronium.*
- It is a modified *y-cyclodextrin* with high affinity for recuronium and vecuronium.
- It encapsulates one molecule of NM blocker within its molecule forming an inactive chelate which is excreted in urine with VA of 2 hours.
- Its side effects are mild precordial pain, nausea, alteration of taste and rarely allergy.

334. Shortest acting calcium channel blocker ?

a) Verapami I

b) Amlodipine

c) Nimodipinc

d) Diltiazam

Correct Answer - C
Ans. is 'c' i.e., Nimodipine

- Nimodipine is shortest acting CCB. →Katzung 10/1/2 - 191
- Nimodipine selectively relaxes cerebral vasculature - can be used in subarachnoid haemmorrhage or ruptured congenital intracranial aneurism.
- Amlodipine is longest acting CCB.
- Amlodipine has maximum oral bioavailabilitv.
- Nisoldipine has minimum oral bioavailability.

335. Benzylisoquinoline muscle relaxant is ?

a) Vecuronium

b) Rocuronium

c) Doxacurium

d) Pancuronium

Correct Answer - C
Ans. is 'c' i.e., Doxacurium

- Competitive (nondepolarizing) blockers are of two types -
- Benzylisoquinolone derivatives
- This includes → d-TC, doxacurium, atracurium, cisatracurium, mivacurium, metocurine.
- These drugs have tendency to release histamine and to block autonomic ganglion.
- Amminio steroid derivatives
- This include pancuronium, rocuronium, vecuronium, pipecuronium, rapacuronium.
- These drugs do not block autonomic ganglia and have minimal histamine releasing property.

336. Acidic drugs bind to ?

a) Globulin

b) a-I glycoprotein

c) Albumin

d) None

Correct Answer - C
Ans. is 'c' i.e., Albumin

- Many natural substances circulate around the body partly free in plasma water and partly bound to plasma proteins, e.g. cortisol, thyroxine.
- Similarly drugs circulate in protein bound and free states, and the significance is that the free fraction is pharmacologically active whereas the protein bound component is a reservoir of drug that is inactive because of this binding.
- Acidic drugs generally bind to plasma albumin.
- Basic drugs bind to a, acid glycoprotein.
- Binding to albumin is quantitatively more important.

337. The most potent topical corticosteroid is

a) Betamethasone valerate

b) Triamcinolone acetonide

c) Hydrocortisone acetate

d) Clobetasol propionate

Correct Answer - D
Ans. is `d' i.e., Clobetasol propionate

338. Orally active hormone is ?

a) TSH

b) Thyroxine

c) GH

d) Prolacin

Correct Answer - B
Ans. is 'b' i.e., Thyroxine

339. Drug of choice for bleeding oesophageal varices is?

a) Ethanolamine oleate

b) Octreotide

c) Propanolol

d) Phytonadione

Correct Answer - B
Ans. is 'b' i.e., Octreotide

- Among the given options, only octeride is used (otherwise vasopressine analogue terlipressine is the DOC).
- Has been explained in previous sessions.

340. Maximum first pass metaboilsm is seen by which route ?

a) Intravenous

b) Interaarterial

c) Rectal

d) Oral

Correct Answer - D
Ans. is 'd' i.e., Oral

- First pass metabolism is seen with oral and rectal routes.
- Maximum first pass metabolism is seen with oral route.
- In rectal route, drug absorbed into external hemorrhoidal veins bypasses liver, but not that absorbed into internal haemorrhoidal veins →First pass metabolism occurs, but less than oral route (avoids first pass metabolism to 50%).
- Most rapid onset of action is seen with I. route.
- Bioavailability by I. V route is 100%.

341. Duration of action depends on -

a) Clearance

b) Rate of elimination

c) Bioavailability

d) All

Correct Answer - D
Ans. is 'd' i.e., All

342. Thiazides act on ?

a) PCT

b) DCT

c) Glomerulus

d) Descending limb of loop of Henle

Correct Answer - C
Ans. is 'c' i.e., DCT

- Tubular absorption can be divided into four sites.
  Site 1- Proximal tubule
- Four mechanisms of Na' transport have been defined in this segment ?
- Direct entry of $M.^{+}$ along electrochemical gradient.
- Na^{t}-K* symport along with active reabsorption of glucose, aminoacids, organic anions and PO43.
- Exchange with *W* by Na* *IW* exchanger located in the luminal membrane of proximal tubule (PT) epithelial cells. The PT cells secrete *W* with the help of carbonic anhydrase. *W* ion exchanges with Nat- present in tubular fluid through Na^{+}-H^{+} exchanger (antiporter) and forms H_2CO_3 by combining with HCO3-. This H_2CO_3 is broken into H_20 + CO_2 by *brush border carbonic anhydrase;* both CO_2 and H_20 diffuse inside the cell and recombine to form H_2CO_3 with the help of *intracellular carbonic anhydrase.* This H,CO_3 is the source of F1*. The dissociated HCO3- in the cell is transported to cortical E.C.F. by basolateral membrane Na^{-F}-HCO_3- symporter resulting in net reabsorption of NaHCO3.
  Carbonic anydrase inhibitors (acetazolamide) act predominantly in PCT and inhibit NaHCO3 reabsorption.

- The disroportionately large HCO_3-, acetate, PO_4-3, passive driving forces for Cl- to diffuse through the paracellular pathway, particularly in the later PT. This takes Na' and H,0 along to maintain electrical neutrality and isotonicity; reabsorption in PT is isotonic.
- Osmotic diuretics (mannitol) are solutes which are not absorbed in proximal tubule and therefore retain water.

Site II Ascending limb of loop of Henle

- The thick ascending limb can be distinguished into two distinct portion.
- Medullary portion lined by cuboidal cells.
- Cortical portion lined by flattened cells.
- Both portions are relatively impermeable to water but absorb salt actively and thus dilute tubular fluid.
- In the medullary portion a distinct luminal membrane carrier transports ions in ratio of *Nee-K^+-2a.* The sodium enters the cell is pumped to ECF by Na ATPase at the basolateral membrane.
- This $Na^{\pm}$-$K^{\pm}$-2C1$^{:}$ symport is inhibited by loop diuretics (eg-Furosemide).
- In addition, a Na*-C1- symporter moves CI- down its electrochemical gradient into ECF and carries Na^+ along.

Site III - cortical diluting segment of loop of Henle and early DT

- This segment is also impermeable to H_20 and continues to absorb salt through Na^t-Ct symporter.
- Thiazide diuretics act at this site.

Site IV - late distal tubule and collecting duct

- In late DT and CD, Na is actively reabsorbed; the cation-anion balance being maintained partly by passive CI-diffusion and partly by secretion of K^+ and Fr.
- Absorption of Na^+ at this site occurs through a specific amiloride sensitive Net' channel and is controlled to a large extent by aldosterone.
- K paring diuretics act at this site.
- Collecting tubule is the most important site of IC secretion by the kidney and the site at which virtually all diuretic induced changes in K^E balance occur - as IC secretion occurs in exchange of Na^t, higher the Na^+ load in CD higher will be K^+ excretion in urine —› Diuretics

which act on PCT (maximum absortion of Na^+ occurs at PCT) like acetazolamide will cause maximum kaliuresis (IC excretion in urine).

- The principal cells are the major sites of Na^t, IC-, and water transport, and intercalated cells are the primary sites of Ft' secretion.
- The collecting tubule is also the site at which the final urine concentration is determined. ADH (vasopressin) controls the permeability of this segment to water by regulating the insertion of preformed water channels (aquaporin2, AQP2) into the apical membrane via a G protein - coupled cAMP - mediated process.
- ADH also stimulates the insertion of urea transporter UT1 molecules into the apical membranes of medullary collecting tubule cells. Urea concentration in the medulla plays an important role maintaining the high osmolarity of the medulla and in the concentration of urine.

343. Due to which side effect felbamate can be discontiuned?

a) Aplastic anemia

b) Renal impairment

c) Gastrointestinal disorder

d) Seizures

Correct Answer - A
Ans. is'a' i.e., Aplastic anemia

- Two severe side effects of felbamate are for which FDA has issued warning that drug not be used are hepatic failure and aplastic anemia

344. Drug used in post prandial sugar control is?

a) Alfa glucosidase

b) Biguinides

c) Sulfonylurea

d) Repaglinide

Correct Answer - D
Ans. is 'd' i.e., Repaglinide

345. Hofmann elimination is ?

a) Inactivation of drug by metabolizing enzyme

b) Unchanged excretion by kidney

c) Excretion in feces

d) Inactivation by molecular rearrangement

Correct Answer - D
Ans. is 'd' i.e., Inactivation by molecular rearrangement
Hofmann elimination

- This refers to inactivation of the drug in the body fluids by spontaneous molecular rearrangement without the agency of any enzyme.
- Atracurium is eliminated by this method.

346. Peripheral neuropathy as a side effect is caused by which of the following anti cancer drugs ?

a) Vincristine

b) Cyclophosphamide

c) Etoposide

d) Irinotecan

Correct Answer - A
Ans. is 'a' i.e., Vincristine
Vincristine (Oncovin)

- Alkaloid derived from Vinca rosae.
- Vincristine belongs to the plant alkaloid group of anticancer.
- Rapidly acting anticancer
- This class of drugs are also known as spindle poison.
- These drugs bind to microtubular protein (tubulin)
- The drug-tubulin complex then attaches itself to microtubules and causes depolymerization of microtubules.
- Depolymerization of microtubule causes

1. Mitotic arrest at metaphase
2. Dissolution of mitotic spindle
3. Interference with chromosome segregation

- Useful for inducing remission in childhood ALL (not useful in maintenance therapy)
- It can also be used for pediatric solid tumors (Wilm's tumor, neuroblastoma, rhabdomyosarcoma) and lymphomas.
- Prominent adverse effects?
  Peripheral neuropathy Alopecia SIADH

- Vincristine is a marrow sparing drug but some times it may cause myelosuppression which is very less than vinblastin.
- Indications of vincristine?
  Hodgkins disease Wilms's tumour Carcinoma lung
  Non hodgkin:s· disease Ewing's sarcoma Myeloma
- Vinblastine and vinorelbine are other vinca alkaloids.
- o Vinblastine's most important clinical use is the curative therapy of metastatic testicular tumor.
- o Vinblastine can cause bone marrow suppression (in contrast with vincristin), alopecia, and nausea & vomiting. o As they arrest mitosis, all vinca alkaloids act in M phase.

347. Drug useful in breast cancer is ?

a) Tamoxifen

b) Cyproterone

c) Testosterone

d) Chlorambucil

Correct Answer - A
Ans. is 'a' i.e., Tamoxifen
Pharmacotherapv of breast cancer

- Many breast carcinomas possess estrogen receptors Estrogen promotes their growth.
- Drugs which decrease the action *of estrogen* on breast CA by one or other mechanisms, can be used in breast CA. Drugs used in Breast cancer
- Selective estrogen receptor modulators (SERMs) - *Tamoxifen,* Tromifene.
- Selective estrogen receptor down regulators (SERDs) - Fulvestrant
- Aromatase inhibitors - Letrozole, anastrozole, exemestone
- LHRH (GnRh) analogues
- Aminoglutethemide
- High doses progesterones - Megastrol acetate.

348. Which of the following drug can casue thyroid dysfunction?

a) Amiodarone

b) Ampicillin

c) Ibutilide

d) Acyclovir

Correct Answer - A
Ans. is 'a' i.e., Amiodarone
Drugs causing hypothyroidism
Lithium Sulfonamide Phenobarbitone Phenytoin Amiodarone Paraminosalycylic acid (PAS) Rifampicin Carbamazepine

349. All drugs have recently been withdrawn from India except ?

a) Gatifloxacin

b) Rafecoxib

c) Cotrimoxazole

d) Phenformin

Correct Answer - C
Ans. is 'c' i.e., Cotrimoxazole

- Drugs which have been withdrawan from India are (i) Rimonabant; (ii)gatifloxacin; (iii) sibutramine; (iv) *rofecoxib&* valdecoxib; (v) astemizole & terfinadine; (vi) fenfluramine & dexfenfluramine; *(vii)phenformin;* (viii) tegaserod; and (ix) rosglitazone.

350. Ranibizomab is monoclonal antibody against ?

a) IL-6

b) CD-20

c) VEGF

d) EGFR

Correct Answer - C
Ans. is 'c' i.e., VEGF

351. All antiretroviral drugs produce peripheral neuropathy except ?

a) Stavudine

b) Zalcitabine

c) Didanosine

d) Indinavir

Correct Answer - D
Ans. is 'd' i.e., Indinavir
Characteristic side effects of important antiretroviral drugs

- Lamivudin - Nausea, headache, fatigue.
- Stavudine - *Peripheral neuropathy,* lipodystrophy, hyperlipidemia, pancreatitis, rapidly progressive ascending neuromuscular weakness.
- Didanosine - *Peripheral neuropathy,* pancreatitis, diarrhea, nausea, hyperuricemia.
- Zalcitabine - *Peripheral neuropathy,* oral ulceration, pancreatitis.
- Zidovudin - Macrocytic anemia, neutropenia, nausea, headache, insomnia, asthenia.
- Tenofovir - Asthenia, headache, diarrhea, nausea, vomiting, flatulance, renal insufficiency.
- Efavirenz - CNS effects, rash, T liver enzymes.
- Nevirapine - Rash, hepatitis, nausea, headache.
- Indinavir - *Nephrolithiasis,* nausea, indirect hyperbilirubinemia, headache, blurred vision, asthenia.

352. Drug of choice for familial hypercholesterolemia ?

a) Gemfibrogil

b) Nicotinic acid

c) Lovastatin

d) Ceholestgramin

Correct Answer - C
Ans. is 'c' i.e., Lovastatin

353. When two different chemical act on two different receptors and their responses is opposite to each other on the same cell is called as ?

a) Physiological antagonism

b) Chemical antagonism

c) Reversible antagonism

d) Competitive antagonism

Correct Answer - A

Ans. is 'a' i.e., Physiological antagonism

- Physiological antagonists are those that produce opposite action by acting on different receptors.

Antagonism

- When one drug decreases or inhibits the action of other.
- Effect of drugs A+ B < effect of drug A+ effect of drug B.
- Antagonism may be :

1. Physical
2. Based on physical property
3. Chemical
4. The two drugs react chemically and form an inactive product.
5. Physiological/functional
6. The two drugs act on different receptors or by different mechanisms, but have opposite overt effects on the same physiological function ie have pharmacological effect in opposite direction.
7. Receptor

- The antagonist interferes with binding of the agonist with its receptor or inhibits the generation of response consequent to such binding.

354. Which of the following drugs used to treat type-II diabetes mellitus causes weight loss

a) Metformin

b) Glimepiride

c) Repaglinide

d) Gliclazide

Correct Answer - A
Ans. is 'a' i.e., Metformin

- Effect of antidiabetic drugs on weight

1. Increased : Sulfonylureas, insulin, pioglitazone
2. Decreased : Metformin, GLP-1 antagonists, pramlinitide
3. No effect: DPP-4 inhibitors

355. Which of the following is not used in acute attack of severe pain due to gout ?

a) Indomethacine

b) Colchicine

c) Febuxostat

d) Corticosteroids

Correct Answer - C
Ans. is 'c' i.e., Febuxostat

356. Which of the following develop first during dependence of a substance ?

a) Tolerance

b) Physical dependence

c) Psychological dependence

d) Withdrawal symptoms

Correct Answer - C

Ans. is 'c' i.e., Psychological dependence

Drug dependence

- Drug dependence, as the name suggests, is a state where a person becomes dependent on a drug *despite knowing the harmful effect of the drug.*
- This state arises from repeated, periodic or continuous administration of a drug, that results in harm to the individual.
- The subject feels a desire, need or compulsion to continue using the drug and feels ill if abruptly deprived of it *(withdraw! syndrome)*
- Drug dependency is characterized by the triad of :

i. Psychological dependence

- First to appear
- There is emotional distress if the drug is withdrawn

ii. Physical dependence

- Follows psychological dependence
- There is physical illness if the drug is withdrawn *(withdraw! symptoms)*

iii. Tolerance

- Tolerance may be

1. Self tolerance → To the drug on which the subject is dependent
2. Cross tolerance → To the other similar (usually) or dissimilar

(sometimes) drugs.

- The frequency of use of drug is *usually daily* and duration is inevitably greater than 2-3 weeks.

357. Which of the antithyroid drug inhibit iodine trapping?

a) Radioactive iodine

b) Iodides

c) Methimozole

d) Thiocyanades

Correct Answer - D
Ans. is 'd' i.e., Thiocyanades

358. Longest acting glucocorticoids is ?

a) Prednisone

b) Prednisolone

c) Cortisone

d) Dexamethasone

Correct Answer - D
Ans. is 'd' i.e., Dexamethasone

359. Study state plasma concentration is achieved after?

a) 2 t1/2

b) 3 t1/2

c) 4 t1/2

d) 5 t1/2

Correct Answer - D
Ans. is 'd' i.e., 5 $t_{1/2}$
Steady state:

- If fixed dose of a drug is administered after regular intervals, its plasma concentration starts increasing.
- However, as plasma concentration rises, rate of elimination also starts increasing.
- When rate of administration becomes equal to rate of elimination, plasma concentration stabilizes.

This is called steady state.
1. Time to reach steady state depends on $t_{½}$. It takes approximately 5 half-lives.
2. Steady state plasma concentration acheived depends on dose rate.

360. Which of the following is a topical sulfonamide ?

a) Sulfadoxine

b) Mafenide

c) Sulfamethopyrazine

d) None

Correct Answer - B
Ans. is 'b' i.e., Mafenide
Classification of sulfonamides

- Short-acting - Sulfadiazine, Sulfisoxaxole, Sulfamethizole, Sulfacystine.
- Intermediate-acting - Sulfamethoxazole.
- Long-acting - Sulfadoxine, Sulfamethopyrazine.
- Topical Sulfonamides - Sulfacetamide sodium, Mafenide, silver sulfadiazine.
- Sulfonamide for RA and ulcerative colitis - Sulfasalazine.

361. Which is not used in status epilepticus?

a) Lorazepam

b) Phenytoin

c) Phenobarbitone

d) Valproate

Correct Answer - D
Ans. is 'd' i.e., Valproate

362. Which second generation antihistaminic does not produce an active metabolite

a) Loratidine

b) Terfenadine

c) Cetrizine

d) None

Correct Answer - C
Ans. is 'c' i.e., Cetrizine
Important facts about anhistaminics

- Loratidine, desloratidine, ebastine and mizolastine are amongst the longest acting antihistaminic (duration of action 24 hrs).
- All second generation antihistaminics are metabolized to active products except cetrizine and mizolastine.
- Loratidine has least CNS depression action.
- Acrivastine is the shortest acting antihistaminic.
- Olopatodine is a recently approved topical HI-antihistaminic used as nasal spray for seasonal allergic rhinitis.

363. Nesiritide cause vasodilatation through ?

a) cAMP

b) cGMP

c) ATP

d) K' ions

Correct Answer - B
Ans. is 'b' i.e., cGMP
Nesiritide

- Nesiritide is a recombinant form of human BNP (Brain natriuretic peptide) that dilates the arterial and venous circulation in a balanced manner.
- It is only available for parentral administration (oral bioavilability is poor)
- It has natriuretic, diuretic and vasodilator properties.
- It does not have inotropic action.
- It has been approved for use in acute cardiac failure.
- Its V/2 is only 18 minutes.
- It acts by increasing cGMP in smooth muscle cells.
- The main side effect is hypotension.
- The limiting factor is its breakdown by enzyme, neutral endopeptidase (NEP) - inhibitors of this enzyme ecadotril are being tested for CHF.

364. Which of the following is renin inhibitor ?

a) Losartan

b) Benazepril

c) Remikiren

d) Imidapril

Correct Answer - C
Ans. is 'c' i.e., Remikiren

365. Which of the following is used for prostatic carcinoma?

a) Danazole

b) Clomiphene

c) Finasteride

d) None

Correct Answer - C
Ans. is 'c' i.e., Finasteride

366. Which anaesthetic agent has maximum MAC ?

a) Ether

b) Methoxyfluorane

c) N_20

d) Halothane

Correct Answer - C

Ans. is 'c' i.e., N_20

Minimal alveolar concentration

- It is the lowest concentration of the anaesthetic in pulmonary alveoli needed to produce immobility in response to a painful stimulus (surgical incision) in 50% individuals.
- It is the measure of potency of inhalation GAs.

Blood : gas partition cofficient

- It is the measure of solubility of agent in blood.
- It determines the speed of onset and recovery.
- Higher the blood : gas partition cofficient, lesser the speed of induction and recovary -4 more blood soluble agents have slower induction and recovery.

Oil : gas partition cofficient

- It is the measure of lipid solubility of the agent, and therefore solubility in the fat - rich tissues of the CNS.
- This equates with the potency of individual agents.
- There is a direct relationship between the minimum alveolar concentration (MAC) value of inhaled anaesthetic agents and lipid solubility in terms of the oil/gas partition cofficient.
- Remember

- Maximum MAC -4 N20
- Minimum MAC Halothane (Previously it was methoxyflurane, but it is not used now)
- Maximum blood : gas partition cofficient -4 Ether
- Minimum blood: gas partition cofficient Desflurane
- Maximum oil : gas partition cofficient Halothane (Previously it was methoxyflurane, but it is not used now)
- Minimum oil : gas partition cofficient -->N20°

367. Treatment of choice for prinzmetal's angina

a) Nitroglycerine

b) CCBs

c) P-blockers

d) Prazosin

Correct Answer - A
Ans. is 'a' i.e., Nitroglycerine
Treatment of variant angina

- Prinzmetal's variant angina is due to spasm of coronary vessels.
- The drugs which dilate the coronary vessels, are the main treatment of Prinzmental's angina.
- Drugs are :

1. Nitrates
2. Calcium channel blockers (verapamil, diltiazem)

- Nitroglycerin is considered the drug of choice for the patient with variant angina.
- Prazosin a selective a-blocker may also be used because it prevents a mediated vasospasm.
- ii-blocker's are contraindicated because they cause constriction of coronary artery due to unopposed a mediated vasoconstriction.

Prevention of variant angina

- In contrast Nitrates are not used for the prevention of variant angina because of delevelopment of tolerance.
- CCBs are the DOC for prevention.

368. Drug of choice for pheochromocytoma ?

a) Propranolol

b) Phenoxybenzamine

c) Prazosin

d) Nitroprosside

Correct Answer - B
Ans. is **'b' i.e.,** Phenoxybenzamine
<u>Pharmacological treatment of pheochromocvtoma</u>

- Preoperatively or when tumour cannot be removed, blood pressure control is achieved by a-adrenoreceptor blockade which reverses peripheral vasoconstriction → Phenoxybenzomine is the DOC
- For hypertensive crises or intraoperative control of BP, phentolamine is the DOC. Prazosin is an alternative. Nitroprusside can also be used-→ Harrison 17th/e p. 1561.
- In adrenaline secreting tumors, if tachycardia persists, 13-blocker can be added after starting oc-blockers.
- ACE inhibitor or calcium channel blockers can be used when blood pressure is difficult to control with phenoxybenzamine alone.
- Metyrosine has been used with some success to block catecholamine synthesis in malignant pheochromocytoma.
- Metaiodobenzylguanidine (MIBG) is actively taken up by adrenergic tissue → 123I-MIBG can be used for selective therapeutic irradiation of functioning metastasis.

369. Which of the following is second generation 3 blocker?

a) Propronolol

b) Timolol

c) Nodalol

d) Atenolol

Correct Answer - D
Ans. is 'd' i.e., Atenolol

370. Which of the following reduces the efficacy of oral contraceptives ?

a) Erythromycin

b) Griseofulvin

c) Cimetidine

d) Disulfiram

Correct Answer - B

Ans. is 'b' i.e., Griseofulvin

- Contraceptive failure may occur if the following drugs are given concurrently :

(a) Enzyme inducer Enhances the metabolism of estrogen & progesterone.

.. Phenytoin 3. Carbamazepine 5. Primidone
2. Phenobarbitone 4. Rifampicin 6. Griseofulvin

(b) Suppression of intestinal microflora enterohepatic circulation.

1. Tetracyclines 2. Ampicillin

371. Uses of alpha-2-agonist are all except?

a) Sedation

b) Glaucoma

c) Benign Hyperplasia of prostate

d) Hypertension

Correct Answer - C
Benign Hyperplasia of prostate.

372. Fluoroquinolones with maximum bioavailability is?

a) Moxifloxacin.

b) Gatifloxacin.

c) Levofloxacin

d) Ciprofloxacin

Correct Answer - C
Ans. C. Levofloxacin.
Pharmacokinetics of fluoroquinolones:

- Good oral bioavailability (except norfloxacin).
- **Levofloxacin - 100% bioavailability.**
- Multivalent cations interfere with absorption (like tetracycline).

373. Mechanism of action of buspirone is?

a) 5 HT1A partial agonism.

b) 5 HT1B antagonism.

c) 5 HT1B partial agonism.

d) 5 HT2C antagonism.

Correct Answer - A
Ans. A. HT1A partial agonism
5 HT1A:
* Presynaptic autoreceptor.
* Modulates serotonin release.
Partial 5 HT1A agonists:
* Buspirone, isapirone, gepirone.
* Useful as anti-anxiety drug.

374. Which statement best describes mechanism of action of azole?

a) Synthesis of ergosterol

b) Thymidylate synthase

c) Targeting Beta-1,3 – glucan

d) Disruption of cell wall.

Correct Answer - A
Ans. A. Synthesis of ergosterol

- Inhibition of 14a-lanosterol demethylase, a key enzyme in ergosterol biosynthesis ? resulting in depletion of ergosterol & accumulation of toxic 14a-methylated sterols in membranes of susceptible yeast species ? Destruction of fungus.

375. Which is the following is orally active direct Xa inhibitor?

a) Rivaroxaban

b) Agrataban

c) Dabigatran

d) Bilverudin

Correct Answer - A
Ans. a. Rivaroxaban
Rivaroxaban, apixaban & edoxaban are factor Xa inhibitors.
Dabigatran etexilate is direct thrombin inhibitor.

376. Which among the following is most probable reason for preference of Cisatracurium over atracurium?

a) Decreased histamine release

b) Increased histamine release

c) Due to elimination by Hofmann elimination

d) Increased CNS toxicity

Correct Answer - A
Ans. A. Decreased histamine release
Cisatracurium:
* Undergoes Hofmann elimination.
* Does not provoke histamine release – Hence, preferred over atracurium.
* No effect on heart rate/BP/nil autonomic effect.
* Produces less laudanosine than atracurium – Hence, less CNS toxicity (seizures).

377. Which of the following drug is used in SIADH?

a) Tolvapatan

b) Desmopressin

c) Vwb factor

d) Terlipressin

Correct Answer - A
Ans. A. Tolvaptan
Tolvaptan:
* Vasopressin antagonists.
* Orally active nonpeptide selective V2 receptor antagonist.
* Metabolized by CYP3A4 – Not given to patients receiving this isoenzyme inhibitor.
* Given once daily.
* t½: 6–8 hours.
Actions:
* Increases free water clearance by kidney (aquaretic).
* Corrects lower plasma Na+ levels.
Uses:
* Useful for hyponatremia treatment.
* Hyponatremia caused by CHF, cirrhosis of liver or syndrome of inappropriate ADH secretion (SIADH).
Side effect:
* Thirst & dry mouth (most frequent).
* Fever, G.I. upset & hyperglycaemia.

378. Drug acting on K+ channels include which of the following?

a) Spironolacton

b) Amiloride.

c) Nicorandil

d) Methyldopa

Correct Answer - C
Ans. C. Nicorandil
Nicorandil:

- Cardioprotective potassium channel opener.
- Causes ischemic preconditioning & coronary dilation – By activating myocardial ATP sensitive K+ channels.
- Also possesses NO-releasing property.
- Useful in angina.

379. Imipenem, a newer antibiotic with a broad antibacterial spectrum, is co administered with cilastatin. Which of the following is the best reason for the same?

a) Combination of antibiotics is synergistic against Pseudomonas specie

b) Cilastatin aids gastrointestinal absorption of active moiety, imipenem

c) Cilastatin inhibits beta=lactamase enzyme destroying imipenem

d) Cilastatin inhibits an enzyme in kidney destroying imipenem

Correct Answer - D

Ans. D. Cilastatin inhibits an enzyme in kidney destroying imipenem

Imipenem-cilastatin 0.5 g i.v. 6 hourly (max 4 g/day).

Effective in serious hospital-acquired respiratory, urinary, abdominal, pelvic, skin & soft tissue infections including neutropenic, cancer & AIDS patients.

For Ps. aeruginosa infections, it should be combined with gentamicin.

380. DOC for smoking cessation?

a) Acamprosate

b) Varenicline

c) Thalidomide

d) Tryptophan

Correct Answer - B
Ans. B. Varenicline (If Bupropion is not an option)
Anti-smoking drugs:

- Bupropion (along with Varenicline & Nicotine replacement therapy) is a USFDA approved first-line agent for pharmacotherapy in smoking cessation.

Varenicline:

- Effective agents for smoking cessation.
- Synthetic drug with partial agonist action at α_4 $ß_2$ nicotinic receptors.
- Has antagonist properties persisting due to long half-life & high receptor affinity.
- Hence, prevents stimulant effect of nicotine at presynaptic α_4 $ß_2$ nicotinic receptors --> results in dopamine release.

381. DOC for Cyclosporiasis?

a) Trimethoprim sulfamethoxazole combination

b) Paromomycin

c) Metronidazole

d) Cyclosporin

Correct Answer - A
Ans. A. Trimethoprim and sulfamethoxazole combination.
Combination of trimethoprim with sulfamethoxazole is DOC for cyclosporiasis & Isosporiasis (Protozoal infection).

382. Mechanism of action of curare like drugs?

a) Blocks ACh synthesis

b) Blocks ACh receptors

c) Persistent depolarization

d) Agonistic with Ach receptors

Correct Answer - B

Ans. B. Blocks ACh receptors

Tubocurarine, Cisatracurium, Rocuronium: Competitive antagonist at nACh receptors mainly at NM junction.

d-tubocurarine:

- Obsolete clinical usage.
- Prototype NM blocker.
- Longer acting isoquinoline derivative.
- MOA: Acts predominantly at nicotinic receptor site blocking their receptors – By competing with acetylcholine (competitive antagonism).

383. A drug with high plasma binding protein property has which of the following properties?

a) Less GFR

b) Less drug interaction

c) Higher volume of distribution

d) Less tubular secretion

Correct Answer - A
Ans. A. Lesser GFR
Only free drugs can be filtered through glomerulus.
Hence, PPB decreases GFR.
Tubular secretion is an energy requiring carrier mediated active transport.
hence , PPB do not interfere with tubular secretion.

384. Mechanism of action of Oseltamivir?

a) Protein synthesis inhibitor

b) Thymidylate synthetase inhibitor

c) Neuraminidase inhibitor

d) Pyrimidine analogs.

Correct Answer - C
Ans. C. Neuraminidase inhibitor
Neuraminidase inhibitors:

- Analogs of sialic acid.
- Interferes with release of progeny influenza A & B virus from infected host cells.
- Competitively & reversibly interact with active enzyme site –> resulting in clumping of newly released influenza virions to each other & to membrane of infected cell.

385. True about colchicines is/are?

a) Acts by neutrophil recruitment

b) Causes metaphase arrest

c) Useful in urate-lowering therapy

d) All of the above

Correct Answer - D
Ans. D. All of the above.
Colchicine:
MOA:

- Acts by inhibiting granulocyte migration into inflamed joint.
- Depolymerization of microtubules leads to neutrophil recruitment to inflamed tissue ? Altering neutrophil motility.
- Decreases secretion of chemotactic factors & superoxide anions by activated neutrophils.
- Causes metaphase arrest.

Most common & dose limiting toxicity:

- Diarrhea.
- Also cause kidney damage, myopathy & bone marrow depression.

Indications:

- Asa rate-lowering therapy (daily colchicines) suppressing attacks precipitated by abrupt serum uric acid changes.

386. Which of the following drug is alpha 2 agonist?

a) Apraclonidine

b) Timolol

c) PG analogues

d) Verampamil

Correct Answer - A
Ans. A. Apraclonidine
Apraclonidine – Selective alpha 2 agonist.
Useful in glaucoma.
Alpha agonists (Brimonidine and apraclonidine) are contraindicated in hypertensive crisis.
Dipivefrin is a prodrug which is converted into epinephrine inside ttre eyeUall, so can safely be used in hypertension.

387. Drug to differentiate Myasthenia gravis from cholinergic crisis?

a) Pyridostgmine

b) Edrophonium

c) Methacholine

d) Clonidine

Correct Answer - B
Ans. B. Edrophomium.
Edrophonium – Used as a diagnostic test for myasthenia.
Steps:

- 2 mg dose injected intravenously.
- If no reaction occurs after 45 seconds, an additional 8 mg administered.
- If the patient has myasthenia gravis, an improvement in muscle strength lasting for about 5 minutes usually observed.

388. Conversion of Norepinephrine to epinephrine is mainly by?

a) S-adenosyl methionine

b) Arginine

c) Phenylalanine

d) Dehydrogenease

Correct Answer - A
Ans. A. S-adenosyl methionine
S-adenosyl methionine is required & enzyme is phenylethanolamine N-methyl transferase.
S-adenosylmethionine donates methyl group for conversion of NE to E in presence of Phenylethanolamine N Methyltransferase enzyme

389. DOC for diphtheria carrier state is?

a) Penicillin

b) Antitoxin

c) Penicillin Or erythromycin

d) Ciprofloxacin

Correct Answer - C
Ans. C. Penicillin or erythromycin
Contacts should receive antibiotics.
Benzathine penicillin G (600,000 units for persons younger than 6 years old and 1,200,000 units for those 6 years old and older)
Oral erythromycin (40 mg/kg/ day for children and 1 g/day for adults) for 7- to 10-day course.
Identified carriers in community also receive antibiotics.
Maintain close surveillance and begin antitoxin at the first signs of illness.

390. MOA of Teduglutide in short bowel syndrome?

a) GLP-2 inhibitor

b) HT1a inhibitor

c) GLP-1 analogs

d) C-peptide analogs

Correct Answer - A
Ans. A. GLP-2 inhibitor
Glucagon-like peptide-2 (GLP-2) – Important intestinotrophic growth factor & mediator of intestinal adaptation.
FDA approved teduglutide (Gattex—NPS) to treat short bowel syndrome in adult patients requiring additional nutrition from I.V. parenteral nutrition.
Effectively improves fluid absorption.

391. DOC for chemotherapy induced vomiting is?

a) Graneseteron

b) Prazosin

c) Clonidine

d) Dimenhydrinate

Correct Answer - A
Ans. A. Granisetron.
Granisetron:

- Serotonin 5-HT3 receptor antagonist.
- Used as an antiemetic treating nausea & vomiting following chemotherapy & radiotherapy.

Main effect:

- Reduces vagus nerve activity (Vagus N. activates vomiting center in medulla oblongata).

392. What is the advantage of fixed dose combination of drugs.

a) Increases efficacy of drug

b) Decreases adverse effects

c) Patient compliance improved

d) All of the above

Correct Answer - D
Ans. D. All of the above
Advantages of FDC:

- Safe and effective.
- Reduces “pill burden” à Enhancing overall treatment outcome.
- Increases efficiency.
- Reduce incidence of adverse drug effects.
- Improves patient compliance.
- Offers low cost (compared to individual components of active ingredients).

393. DOC for digitalis is induced centro-chilar tachycardia?

a) Lidocaine

b) Reducing dosage of digoxin itself, reverses the condition

c) Verapamil

d) Beta blockers

Correct Answer - A

Ans. A. Lidocaine

Digitalis toxicity:

Features:

- Generally unwell & lethargy.
- Nausea & vomiting.
- Confusion.
- Yellow-green vision.
- Arrhythmias (e.g. AV block, bradycardia)
- Dizziness.

Precipitating factors:

- **Renal disease**
- **Hypokalaemia**
- **Hypomagnesemia**
- Hypoalbuminemia
- Hypothermia
- Hypothyroidism
- **Hypercalcemia.**
- Hypernatremia
- Acidosis.
- Myocardial ischaemia.
- **Partial AV block.**

Drugs:

- **Amiodarone.**
- **Quinidine.**
- **Verapamil.**
- **Spironolactone.**
- **Furosemide.**
- **Hydrochlorothiazide -** Compete with DCT secretion, hence reducing excretion.

Management:

- **Digibind.**
- **Correct ventricular arrhythmia by lignocaine.**
- Bradyarrhythmias by propanolol.
- Atrial tachyarrhythmias by atropine.
- Phenytoin.
- Monitor K+

394. Antiretroviral therapy is to be given in HIV infected patients irrespective of presence of symptoms if CD4 count is less than?

a) 100

b) 150

c) 200

d) 350

Correct Answer - C
Ans. C. 200
Offer ART to symptomatic patients if the CD4 count is 200–350 cells/mm3
Consider ART for asymptomatic patients with CD4 count between 200-350 cells/mm3 and monitor closely for new symptoms.
If the CD4 count is 200–250 cells/mm3, physicians can consider repeating the CD4 test in 4 weeks in asymptomatic patients.
This is to rule out the possibility of a 20% margin of error in laboratory results.
Patients should start ART before the CD4 count drops below 200 cells/mm3
Ref: http://naco.gov.in/upload/Policies%20&%20Guidelines/1.%20Antire
infected%20Adults%20and%20Adolescents%20Including%20Post-exposure.pdf

395. Carbapenem which has tendency to cause maximum seizures?

a) Imipenem

b) Ertapenem

c) Doripenem

d) Meropenem

Correct Answer - A
Ans. A. Imipenem.
Imipenem:

- Carbapenem grp. of drugs.
- Maximum tendency to cause seizures.

396. True about treatment of early breast carcinoma?

a) Aromatase inhibitors are replacing tamoxifen in premenopausal women

b) Post mastectomy radiation therapy is given when 4 or more lymph nodes are positive

c) Tamoxifen is not useful in post-menopausal women

d) In premenopausal women, multidrug chemotherapy is given in selected patients

Correct Answer - B

Ans. B. Post mastectomy radiation therapy is given when 4 or more lymph nodes are positive

Tamoxifen:

- Effective in both pre & postmenopausal women (if hormone receptor positive)
- DOC in premenopausal women

Aromatase inhibitors:

- Proven more beneficial than tamoxifen in postmenopausal women.

MOA:

- By lowering estrogen in post-menopausal women with hormone-receptor-positive breast cancer.
- In post-menopausal women, most of body's estrogen is from androgen.
- Aromatase inhibitors inhibits aromatase enzyme à blocking androgen into estrogenà lowering estrogen produced outside ovaries.

Uses:

- 1st line therapy in postmenopausal women, adjuvant setting or

secondary agent after 1 to 2 years of adjuvant tamoxifen therapy.

Advantages:

- Reduced incidence of endometrial cancer.

Adverse effects:

- Bone mineral density alteration-à osteoporosis & increased fractures in postmenopausal women.

Other options:

- In premenopausal women with any form of adjuvant systemic therapy should receive multidrug chemotherapy.

397. A patient of RA is taking methotrexate, steroids and NSAIDs since 4 months but activity of disease progression is same. What should be the next probable step?

a) Start monotherapy with anti TNF alpha drugs

b) Continue methotrexate and steroids

c) Stop oral methotrexate and start parenteral methotrexate

d) Add sulfasalazine

Correct Answer - D
Ans. D. Add sulfasalazine

398. IV Mannitol is used for treatment of

a) Acute congestive glaucoma

b) Pulmonary edema

c) Acute renal failure

d) CHF

Correct Answer - A
Ans. A. Acute congestive glaucoma.
Mannitol may be used to reduce intraocular pressure when given intravenously.

399. Variation in sensitivity of response to different doses of a drug in different individual is obtained from?

a) Dose response curve

b) Therapeutic index

c) Bioavailability

d) Phase 1 clinical trials

Correct Answer - A

Ans. A. Dose response curve

The dose–response relationship, or exposure–response relationship, describes the change in effect on an organism caused by differing levels of exposure to a stressor after a certain exposure time, or to a food.

Applies to individuals, or to populations.

400. Which one of following is functions of PGI2?

a) Inhibits platelet aggregation

b) Is a vasodilator

c) Is pyrogenic like PGE2

d) All of the above

Correct Answer - D
Ans. D. All of the above.
Functions of PGI2:

- Inhibits Inhibits platelet aggregation, vasodilator plus bronchodilator & pyrogenic like PGE2.

401. Mechanism by which Ach decreases heart rate is by:

a) Delayed diastolic depolarization

b) Increase in plateau

c) Decrease preload

d) Increase afterload

Correct Answer - A
Ans: A. Delayed diastolic depolarization

- Acetyl choline decreases heart rate primarily by inhibiting the spontaneous depolarization of cells in SA node; also known as diastolic depolarization. This is achieved by inhibition of the funny current in the SA node.

Effect of acetylcholine on cardiovascular system

Heart rate decreases	Ach inhibits funny current generation in the pacemaker cells of SA node
AV conduction decreases	Ach blocks L type calcium channels in the AV node
Atrial contraction decreases > ventricular contraction	Atrium is supplied by cholinergic fibers more than the ventricles. Ach opens potassium channels and decreases cyclic AMP in the myocardial cells.
Vasodilation	Ach increases calcium in endothelial cells, which stimulates calcium dependent ENOS and releases NO which causes vasodilation.

402. Which of the following act through G protein coupled receptors?

a) Ach Muscarinic receptors

b) Insulin receptors

c) Ach Nicotinic receptors

d) GABA-A receptors

Correct Answer - A
Ans: A. Ach Muscarinic receptors
Ref: Lippincott, 6't'ed., Pg. 27-28

- Ml, M2, M3, M4 and M5 are Ach Muscarinic receptors.
- They are G protein coupled receptors

403. True about drug metabolism ?

a) Glucuronidation is phase I reaction

b) Most common enzyme involved is Cyp 3A4/5

c) Reduction is most common reaction

d) Cytochrome p450 is involved phase-II reaction

Correct Answer - B

Ans. is'b'i.e., Most common enzyme involved is Cyp 3A4/5

(Ref: Katzung Ilth/e p. 55)

- Cytochrome p450 enzymes are microsomal enzymes that are involved in phase I metabolism of many drugs.
- Most of the drugs are metabolized by Cyp 3A4 isoform.
- Cyp 3 A 4/5 carryout biotransformation of largest number (nearly 5O%) of drugs.

404. Benzodiazepine binding ste on GABA receptors is on ?

a) y-subunit

b) a-subunit

c) β-subunit

d) δ-subunit

Correct Answer - B
Ans. is'b'i.e., a-subunit
[Ref: Goodman (t Gilman 1I'h/e p. 405, 406; RecEttor subunit & coffiplexes p. 168]

- The exact subunit structures of native GABA receptors are still are unknown, but it is thought that most GABA receptor are composed of alpha, beta & gamma subunits that Coassemble with some uncertain stoichiometry.
- Binding site of GABA is on beta-subunit.
- Benzodiazepine site is located on the a subunit but the stabilization or completion of that site in the assembled. Structure also requires the y subunit.

405. Dexmedetomidine acts on which receptor for its analgesic action ?

a) $5HT_{2A}$

b) D_2

c) α_{2A}

d) D_5

Correct Answer - C

Ans. 'c' i.e., α_{2A}

- Dexmedetomidine is a centrally active selective alpha (α2) agonist that has been introduced for sedating critically ill ventilated patients in intensive care units.

406. Neuropathy caused by INH increases in all except?

a) Uremia

b) Hyperthyroidism

c) Diabetes mellitus

d) Poor nutrition

Correct Answer - B
Ans. is'b'i.e., Hyperthyroidism
[Ref Katzung 11'h/e p. 1069]
isoniazid induced peripheral neuropathy:

- Peripheral neuropathy is observed in 10 to 20% of patients given doses greater than 5 mg/kg/d, but it is infrequently seen with the standard 300-mg adult dose.
- Peripheral neuropathy is more likely to occur in slow acetylators and patients with predisposing conditions such as malnutrition, alcoholism, iliabetes, AIDS, and uremia.

407. Drugs which are used in acute asthma include?

a) Budesonide

b) Terbutaline

c) Salbutamole

d) Theophylline

e) Sodium cromoglycate

Correct Answer - B:C:D
Ans. is'b'i.e., Terbutaline,'c'i.e. Salbutamole &'d'i.e. Theophylline
[Ref: KDT Vh/e p. 223]
Treatment of acute asthma:

- The only drugs effective for the treatment of acute attack of asthma are bronchodilators (beta 2-receptor agonists, anticholinergics, and methylxanthines).

Mild attacks:

- For patients with mild attack inhalation of a short acting beta-2 receptor agonist, e.g. salbutamol (albuterol), terbutaline is used.
- An inhaled anticholinergic, e.g. ipratropium may be added if there is no satisfactory response to beta 2- agonists alone.
- In patients who are refractory to inhaled therapies, i.v. aminophylline (theophylline) may be effective.

Severe attacks:

- Oxygen phts continuous administration of aerosolized salbutamol (albuterol) plus systemic steroids, e.g. methylprednisolone, hydrocortisone.

- Recently, MgSO4 has been tried in acute severe asthma by IV or inhalation route.

408. Peripheral neuropathy is/are caused by:

a) Vincristine

b) Sulfonamide

c) Amiodarone

d) Paclitaxel

e) None

Correct Answer - A:C:D
Ans. (A) Vincristine (C) Amiodarone (D) Paclitaxel
[Ref: Harrison 19th/2686-88, 18th/3463-66; KDT 7th/706]

- Sulfonamide not mentioned in list of drugs causing neuropathies

409. Which of the following drugs is not an inhibitor of P - glycoprotein?

a) Quinidine

b) Erythromycin

c) Verapamil

d) Phenobarbitone

Correct Answer - D
Ans. D. Phenobarbitone
[Ref KDT 7Ve p.15]
P-glycoprotein:

- Product of multidrug resistance 1 gene (ABCB1).
- Important role in pharmacokinetics of drugs.
- An ATP-binding cassette (ABC) transporter and is an important factor to limit membrane permeability in several tissues and/or elimination pathways into urine (renal tubles) and bile (liver).

Some drugs are substrate for both CYP3A4 and P-gp. Examples :

- CCBs: Verapamil, diltiazam
- Anticancer drugs: Etoposide, daunorubicin, doxorubicin, paclitaxel, vincrisitine Antimicrobials: HIV protoease inhibitors (indinavir, ritonavir), erythromycin, ketoconazole
- Immunosuppressants: Cyclosporine, tacrolimus, sirolimus.
- Other: Digoxin, fexofenadine, loperamide.

410. Liposome drug delivery system is used for all except ?

a) Vincristine

b) Amphotericin B

c) Hyoscine

d) Amikacin

Correct Answer - C

Ans. C. Hyoscine

Important drugs with liposome delivery systems:

- Anticancer drugs → Donorubicin, Daunorubicin, vincristine, camptothecin, methotrexate, cisplatin, mitoxantrane
- Antifungal → Amphotericin B, Nystatin
- Antibiotics → Amikacin, Ampicillin, ciprofloxacin, Ribavirin, Ganciclovir, chloroquine
- Others → IL-2, cyclosporin

411. Tachyphylaxis is seen with which of the following drugs?

a) Pethidine

b) Ephedrine

c) Phenoxybenzamine

d) Phentolamine

Correct Answer - B

Ans. B. Ephedrine

[Ref KDT 7th/e p. 70 & 6th/e p. 68; Laurence 50/e p. 448; Katzung 11 `"/e p. 32]

Tachyphylaxis:

* Rapidly diminishing response to repeated administration of a drug.

Tachyphylaxis may occur due to:

* Down-regulation of receptors
  - When tissues are continuously exposed to an agonist, the number of receptors decreases (down-regulation).
  - It occurs in asthmatics who use 132-agonist bronchodilators excessively.
* Depletion of stored neurotransmitter
  - It is particularly common with indirectly acting sympathomimetics drugs, e.g. amphetamine, tyramine and ephedrine.
  - It is due to depletion of releasable pool of noradrenaline from adrenergic nerve terminals.

412. Synergestic action is shown by the following drug combinations except?

a) Glibenclamide and metformin

b) Enalapril and hydrochlorthiazide

c) Levodopa and carbidopa

d) Hydrochlorthiazide and triamterene

Correct Answer - D

Ans. D. Hydrochlorthiazide and triamterene

[Ref KDT p. 56]

SYNERGISM:

- When the action of one drug is facilitated or increased by the other, they are said to be synergistic.
- In a synergistic pair, both the drugs can have action in the same direction or given alone one may be inactive but still enhance the action of the other when given together.

Additive drug combination:

- Aspirin + paracetamol - As analgesic/ antipyretic
- Nitrous oxide + halothane - As general anesthetic
- Amlodipine + atenolol - As antihypertensive
- Ephedrine + theophylline - As bronchodilator

413. Oxidation in biotransformation is ?

a) Functionalization reaction

b) Conjugation reaction

c) Synthetic reaction

d) Felson reaction

Correct Answer - A
Ans. A. Functionalization reaction
[Ref: KDT 7th/e p. 22, 23]
Biotransformation includes 2 types of reaction:

- Phase I/Non synthetic/functionalization reaction: Oxidation, reduction, hydrolysis, cyclization, decyclization.
- Phase H/synthetic/conjugation reactions: Acetylation, glutathione conjugation, glucoronide conjugation (glucuranization), glycine conjugation, methylation, sulfate conjugation (sulfuranation), nucleotide synthesis.

414. Oxybutynin acts by ?

a) Adrenergic receptor antagonist

b) Muscarinic rece8ptor antagonist

c) Histaminic antagonist

d) Serotonergic antagonist

Correct Answer - B

Ans. B. Muscarinic rece8ptor antagonist

[Ref KDT 7thle p. 113, 117]

Oxybutynin:

- This recently introduced anti muscarinic (muscarinic receptor antagonist) has high affinity for receptors urinary bladder and salivary glands with additional smooth muscle relaxant and local anesthetic properties.
- It is relatively selective for M 1 /M3 subtypes than for M2.

415. Which of the following drug crosses BBB?

a) Glycopyrrolate

b) Neostigmine

c) Physostigmine

d) All of the above

Correct Answer - C
Ans. C. Physostigmine
[Ref KDT p. 07, 117]

- Physostigmine - Rapidly absorbed from GIT and parenteral sites, penetrates cornea freely and crosses BBB (blood brain barrier).
- Neostigmine - It is a quarternary ammonium compound which is poorly absorbed orally with poor corneal penetration and doesn't cross BBB.
- Glycopyrrolate - It is a potent and rapidly acting anti - muscarinic lacking central effects and is used as a pre-anaesthetic medication.

416. Which of the following is not true about the action of anticholinergic drugs?

a) Atropine is a CNS depressant

b) Atropine causes mydriasis, abolition of light reflex and cycloplegia

c) Atropine causes bronchoconstriction

d) Atropine can increase the chances of hyperthermia in children

Correct Answer - A:C

Ans. A. Atropine is a CNS depressant & C. Atropine causes bronchoconstriction

[Ref KDT 7iVe p. 113, 114]

Actions of anticholinergic drugs:

- These are opposite of parasympathetic (cholinergic) system.
- Atropine has an overall CNS stimulant action.
- Stimulates medullary centres - vagal, respiratory, vasomotor.
- Depresses vestibular excitation and has antimotion sickness property.
- Abbrevates refractory period of A-V node and facilitates A-V conduction, PR interval is shortened.
- Does not have any consistent or marked effect on BP.
- Used in arrhythmias like AV block and digitalis induced arrhythmia.
- Causes mydriasis due to contraction of circular muscles (constrictor pupillae), abolition of light reflex and cycloplegia (paralysis of accomodation).
- Increases intraocular tension → Contraindicated in glaucoma.
- Causes bronchodilatation and reduced airway resistance, especially in COPD and asthma patients.
- Relaxes urinary bladder, urinary retention may

occur → contraindicated in benign prostate hypertrophy.

- Decreases sweat, salivary, tracheobronchial and lacrimal secretion.
- Decreases secretion of acid, pepsin and mucus in the stomach.

417. Advantage of glycopyrolate over atropine is ?

a) It is a natural alkaloid

b) It lacks CNS penetration

c) Can be used in OPC poisoning

d) Is more potent

Correct Answer - B
Ans. B. It lacks CNS penetration
[Ref KDT 7thie p. 117]
Glycopyrrolate:

- Quarternary synthetic compound, which is potent and rapidly acting anti muscarinic lacking CNS penetration and central effects.
- Almost exclusively used in pre anaesthetic medication.

418. Oximes are ineffective in which of the following poisoning :?

a) Organophosphate poisoning

b) Amanita phylloides poisoning

c) Carbamate poisoning

d) Dhatura poisoning

Correct Answer - C

Ans. C. Carbamate poisoning

[Ref KDT 7th/e p. 111 & 6t /e p. 105; Katzung 11thie p. 121]

- Oximes [Pralidoxime 2-PAM, obidoxime and diacetyl-monoxime (DAM)] are used in organophosphate poisoning.
- Oximes acts by reactivating cholinesterase enzyme.
- Ineffective in Carbamates poisoning.
- Pralidoxime is contraindicated in carbamates poisoning, because not only it does not reactivate carbamylated enzyme, it has weak anti-chE activity of its own.
- Most commonly used cholinesterase reactivater.

419. Which of the following is an example of irreversible carbamate?

a) Ambenonium

b) Galantamine

c) Propoxur

d) Rivastigmine

Correct Answer - C
Ans. C. Propoxur
Irreversible carbamate:

- Carbaryl
- Propoxur

420. 38 yr old patient with high risk of coronary artery disease risk has hypertention, which of the following antihypertensive drugs will be suitable as a first line treatment for this patient?

a) ACE inhibitors

b) Calcium channel blockers

c) Beta adrenergic blockers

d) Diuretics

Correct Answer - A

Ans. A. ACE inhibitors

- Patient is relatively young hypertensive (38 yrs) with high risk of coronary artery disease, ACE inhibitors/ Angiotensin receptor blocker is the suitable first line therapy for management of hypertention in such patients.

421. Which of the following is NOT a side effect of amiodarone?

a) Pulmonary fibrosis

b) Corneal microdeposits

c) Photosensitivity

d) Tachycardia

Correct Answer - D
Ans. D. Tachycardia
[Ref: KDT 7"Ve p. 534]

- Amiodarone is a broad spectrum anti - arrhythmic drug which belongs to class III of the anti - arrhythmic drugs.
- Following are the adverse effects -
- Fall in BP, bradycardia and myocardial depression occurs on i.v. injection.

422. A side effect of loop diuretics is used in ?

a) Post - surgery care

b) Chronic anemia

c) Blood transfusion

d) Oncology/cancer

Correct Answer - D

Ans. D. Oncology/cancer

- Furosemide and other loop diuretics cause hypocalcemia by increasing Ca2+ excretion.
- For the same reason they are used in tumor induced hypercalcemia to reduce serum calcium level.

423. Why adenosine has a short half life?

a) Spontaneous hydrolysis

b) Uptake in subcutaneous tissue

c) Uptake in RBC and endothelial cells

d) Renal excretion

Correct Answer - C

Ans. C. Uptake in RBC and endothelial cells

[Ref KDT 6thIe p. 518; Katzung 11thie p. 244]

- Adenosine is the DOC for P.S.V.T.
- Administered by rapid i.v. injection either as free base or as ATP.
- Action is very rapid - terminates more than 90% episodes of PSVT within 30 sec.
- Adenosine is very short acting (t. in blood - 10 sec) due to uptake into RBCs and endothelial cells.

424. Mechanism of action of nicorandil is ?

a) K* channel blocker

b) I(' channel opener

c) Na' channel blocker

d) Cl- channel blocker

Correct Answer - B
Ans. B. I(' channel opener
[Ref: KDT 7th/e p. 540, 552]

- Nicorandil
- This dual mechanism anti - angina drug that activates ATP sensitive K+ channels (potassium channel opener) thereby hyperpolarizing vascular smooth muscle.

425. Which of the following antiarrhythmic drugs can develop Long QT syndrome?

a) Ibutilide

b) Dofetilide

c) Sotalol

d) All the above

Correct Answer - D

Ans. D. All the above

Proarrhythmic Manifestations of Most Frequently Used Antiarrhythmic Agents:

- Amiodarrone
- Digoxin
- Disopyramide
- Dofetilide
- Dronedarone
- Flecainides
- Propafenone
- Quinidine
- Sotalol

426. Which of the following is not true about the mechanism of action of digitalis?

a) It binds to the intracellular face of Na' ATPase enzyme

b) There is rise in intracellular Na'

c) It has positive ionotropic action

d) Digitalis action is independent of cardiac innervation

Correct Answer - A

Ans. A. It binds to the intracellular face of Na' ATPase enzyme

[Ref KDT 7th/e p. 496]

Digitalis mechanism of action:

- Digitalis increases the force of contraction by a direct action independent of the innervation.
- Binds to the extracellular face of the Na+ K+ ATPase and inhibits the enzyme causing rise in the intracellular levels of Na+.
- The raised Na+ in turn inhibits the Na+ Ca2+ exchanger and causes rise in intracellular Ca+.
- This raised intracellular Ca2+ is responsible for the positive ionotropic effect.
- Thus, digitalis increases the cardiac contractability and force of contraction.

427. Which drug inhibits both cyclooxygenase and lipooxygenase?

a) Aspirin

b) Indomethacin

c) Imidazole

d) BW755

Correct Answer - D
Ans. D. BW755
[Ref Biochemistry of eye by Elaine R. Berman p.165]

- Drug - BW 755
- Enzyme inhibited - Cyclooxygenase and lipoxygenase

428. Drug acting on 5HT4 receptor is ?

a) Loxiglumide

b) Renzapride

c) Atractiloside

d) Metoclopromide

Correct Answer - B
Ans. B. Renzapride
[Ref KDT 7th/e p. 174]
Renzapride:

- Renzapride is a cisapride congener which is a prokinetic drug and it increases the gastrointestinal motility by acting on 5HT4 receptors.
- Renzapride is still more selective for 5HT4 than cisapride.
- It also has lesser propensity to cause cardiac arrhythmias.

429. Drug of choice for aborting the acute attack of migraine is ?

a) NSAIDs like indomethacin

b) Opioids like morphine

c) Triptans like sumatriptan

d) Glucocorticoids

Correct Answer - C
Ans. C. Triptans like sumatriptan
[Ref KDT 7th/e P. 179]
Treatment and prophylaxis of migraine:
* For aborting an acute attack of migraine, sumatriptan (or any other triptan) is the drug of choice.
  - Other drugs used for treatment are NSAIDs, ergo famine and dihydroergotamine, and intranasal butorphanol.
* For Prophylaxis, Beta-blocker (propranolol) is the drug of choice.
  - Other drugs used for prophylaxis are tricyclic antidepressants (amitriptyline), calcium channel blockers (cinnarizine, verapamil), serotonine antagonists (methysergide, cyproheptadine), MAO inhibitors, and anticonvulsants (valproate, topiramate, gabapentine), fluxetin, onabotulinum toxine A, pepaverine and phenalzine.

430. Rasburicase is an analogue of ?

a) Xanthine oxidase

b) IMP dehydrogenase

c) Adenosine Deaminase

d) Urate Oxidase

Correct Answer - D

Ans. D. Urate Oxidase

- Rasburicase is a recombinant version of urate oxidase.
- The cDNA of Urate oxidase is obtained from Aspergillus flavus and is introduced into Sachhromyces cervicae.
- It is used for reducing urate levels.

431. Adverse effect of methysergide is ?

a) Metabolic syndrome

b) Endocardial fibrosis

c) Peyronie's syndrome

d) Dry mouth

Correct Answer - B

Ans. B. Endocardial fibrosis

[Ref KDT 7th/e p. 174]

Methysergide

- Chemically related to ergot alkaloids which antagonizes action of 5HT on smooth muscles including that of blood vessels.

Mechanism of action

- Potent 5HT2A/2C antagonist with No a adrenergic or dopaminergic action.

Uses:

- Migraine prophylaxis, carcinoid syndrome and post gastrectomy dumping syndrome.

Adverse effects

- Abdominal, pulmonary or endocardial fibrosis is produced with prolonged use.

432. Contraindication for the triptans is which of the following?

a) Ischemic heart disease

b) Epilepsy

c) Hepatic failure

d) All of the above

Correct Answer - D
Ans. D. All of the above
[Ref KDT 7th/e p. 179]
Triptans

- These are 5-HTIDAB receptor agonists.
- All triptans can cause coronary vasospasm and are contraindiated in IHD. Other contraindications are hypertension, epilepsy, hepatic or renal impairment and during pregnancy.
- The most important adverse effects are feeling of chest pressure, tightness and pain which may be accompanied by arrhythmia and MI and appear to be due to coronary vasospasm.

433. Use of PGF 2 a analogues is contraindicated in ?

a) Post partum harmorrhage

b) Glaucoma

c) Bronchial asthma

d) Priapism

Correct Answer - C

Ans. C. Bronchial asthma

[Ref KDT 7th/e p. 185,189] Prostaglandin F 2 a]

- PGF 2a analogues are smooth muscle constrictor which bring about contraction of smooth muscles
- PGF 2a analogue like carboprost is used for post partum haemorrhage
- PGF 2a analogues like latanoprost has been used for glaucoma and is a first line drug for open angle glaucoma.
- It is contraindicated in bronchial asthma as it causes bronchial muscle contraction.

434. Advantage of formoterol over salmeterol is ?

a) It can be used for prophylaxis in asthmatics

b) It has got a faster onset of action

c) It is a short acting beta 2 agonist

d) It also has beta 1 agonistic action

Correct Answer - B
Ans. B. It has got a faster onset of action
[Ref KDT 7Ve p. 224; Goodman Gillman 11thie p. 720]
Formoterol

- It is a long acting selective 132 agonist which acts 12 hours when inhaled. In comparison to saletetrol it has faster onset of action and is used on a regular morning - evening schedule for round the clock bronchodilatation.
- Dose : 12 - 24 pg inhalation twice daily.

435. Mechanism of action of Teriparatide is ?

a) Recombinant PTH [rPTH]

b) Recombinant calcitonin

c) Recombinant insulin

d) Recombinant prolactin

Correct Answer - A

Ans. A. Recombinant PTH [rPTH]

Teriparatide

- This is recombinant preparation of 1-34 molecules of amino terminal of human PTH.
- It duplicates all the actions of long (1-84) PTH.
- Diagnostic use: To differentiate pseudo from true hypoparathyroidism: teriparatide is given i v: if plasma calcium level fails to rise, then it is pseudohypoparathyroidism.

436. Anti-inflammatory actions of corticosteroids are mediated by ?

a) By inhibiting angiogenesis

b) By inhibiting breakdown of phospholipids

c) By increasing vascularity

d) By increasing granulation tissue formation

Correct Answer - B
Ans. B. By inhibiting breakdown of phospholipids
[Ref KDT 7thie p.279]

- Glucocorticoids interfere at several steps in the inflammatory response but the most important overall mechanism appears to be limitation of recruitment of inflammatory cells at the local site and production of proinflammatory mediators like PCs, LTs, PAF through inhibition of phospholipase A.

437. Which of the following is not an inhalational steroids?

a) Beclomethasone

b) Betamethasone

c) Budesonide

d) Fluticasone acetonide

Correct Answer - B

Ans. B. Betamethasone

[Ref KDT 7Ve p. 290]

- Corticosteroid may be used as inhaled or systemic drugs in asthma.

Inhaled steroids

- These are glucocorticoids with high topical and low systemic activity.
- Commonly used drugs are beclomethasome, budesonide, fluticasone and ciclesonide.
- Inhaled steroids are the most effective anti-inflammatory agents used in asthma.

438. Which of the following antithyroid medications had the maximum chances of causing agranulocytosis?

a) Carbimazole

b) Clotrimazole

c) Propylthiouracil

d) Methimazole

Correct Answer - C
Ans. C. Propylthiouracil
[Ref KDT 7h/e p.253]

- Propylthiouracil has got maximum chance of causing agranulocytosis. It is mostly reversible.

439. Mifepristone acts on which receptor?

a) Type A progesterone receptor

b) Estrogen receptor

c) LH receptor

d) Thyroid receptor

Correct Answer - A
Ans. A. Type A progesterone receptor
[Ref KDT 7hle p. 319, 320]
Mifepristone

- It is a potent, 19 - norsteroid.
- It has anti - progestational, significant anti - glucocorticoid and anti - androgenic activity.
- Mifepristone is a partial agonist and competitive antagonist at both A and B forms of progesterone receptor (PR) In the absence of progesterone (anovulatory cycles after menopause) it exerts weak progestional activity and induces predecidual changes.

440. Pegvisomant is ?

a) Somatostatin antagonist

b) Somatotropin antagonist

c) GH receptor antagonist

d) GH receptor agonist

Correct Answer - C
Ans. C. GH receptor antagonist
[Ref KDT 7th/e p. 238]
Pegvisomant

- This polyethylene glycol complexed mutant GH.
- It binds to GH receptor but does not trigger signal transduction and acts as a GH receptor antagonist.

441. Drug used for medical management of acromegaly due to small pituitary tumors is?

a) Fulvestrant

b) Pegvisomant

c) Vigabatrin

d) Cabergoline

Correct Answer - B
Ans. B. Pegvisomant
[Ref KDT 7h/e p. 238]
Pegvisomant:

- This polyethylene glycol complexed mutant GH.
- It binds to GH receptor but does not trigger signal transduction and acts as a GH receptor antagonist.
- Approved for treatment of acromegaly due to small pituitary adenomas.

442. Tibolone is a ?

a) Natural steroidal estrogen

b) Natural non-steroidal estrogen

c) Synthetic steroidal estrogen

d) Synthetic non-steroidal estrogen

Correct Answer - C
Ans. C. Synthetic steroidal estrogen
[Ref KDT 7Ve p. 306, 311]
Synthetic estrogens

- Steroidal → Ethinylestradiol, mestranol, tibolone.
- Nonsteroidal → Diethylstilbestrol, hexestrol, dienestrol.

443. Tibolone is used for ?

a) Fibroids

b) Endometriosis

c) Hormone replacement therapy

d) Anovulatory infertility

Correct Answer - C
Ans. C. Hormone replacement therapy
[Ref KDT 7thie p. 306, 311]
Tibolone

- It is a 19-norsteroid developed specifically to be used for hormone replacement therapy, which combines estrogenic and progestational properties with weak androgenic activity.
- In a dose of 2.5 mg daily, it suppresses menopausal symptoms and lowere the raised Gn levels. No endometrial stimulation has been noted.
- Urogenital atrophy, psychological symptoms, libido and osteoporosis are improved similar to other forms of HRT.
- Increase in breast cancer risk appears to be less than with combined HRT.
- Weight gain, increased facial hair, and occasional vaginal spotting may be noted.

444. Danazol acts through :?

a) Increases release of Gn

b) Increases insulin release

c) Inhibition of release of Gn

d) Inhibition of insulin release

Correct Answer - C

Ans. C. Inhibition of release of Gn

[Ref KDT 7th/e p. 301]

Danazole

- It has weak androgenic, anabolic and progestational activity.
- The most prominent action is suppression of gonadotropin (FSH/LH) from pituitary.

445. Mechanism of action of Voglibose is :?

a) p galactosidase inhibitor

b) 3 lactase inhibitor

c) a glucosidase inhibitor

d) 3 glucosidase inhibitor

Correct Answer - C
Ans. C. a glucosidase inhibitor
[Ref KDT 7th/e p. 277]
Voglibose

- It is a glucosidase inhibitor which prevents breakdown of complex carbohydrates into simpler sugars like glucose.

446. Metyrosine acts by inhibiting ?

a) Phenolethanolamine N methyl Transferase

b) Phenyl alanine Hydroxylase

c) Tyrosine Hydroxylase

d) Tyrosinase

Correct Answer - C

Ans. C. Tyrosine Hydroxylase

- Metyrosine is a Methyl L-tyrosine
- It is a competitive inhibitor of Tyrosine Hydroxylase
- Tyrosine hydroxylase is the enzyme which converts Tyrosine to Dihydroxyphenylalanine (DOPA). It is the rate limiting enzyme of catecholamine synthesis.

447. Which of the following oral hypoglycaemic drugs has the longest t 1/2 ?

a) Gliclazide

b) Glimepiride

c) Chlorpropamide

d) Tolbutamide

Correct Answer - C
Ans. C. Chlorpropamide
[Ref KDT 6th le p. 268]

- Tolbutamide is shortest acting sulfonylurea.
- Chlorpropamide is longest acting sulfonylurea and longest acting oral hypoglycemic.
- Nateglinide is shortest acting oral hypoglycemic.
- Tolbutamide, because of shorter duration of action, is safer in elderly and in those prone to hypoglycemia.

448. All of the following are uses of octreotide except :?

a) Secretory diarrhea

b) Acromegaly

c) Hepatic encephalopathy

d) Bleeding esophageal varices

Correct Answer - C

Ans. C. Hepatic encephalopathy

[Ref KDT 7tVe p. 238]

- Octreotide is a synthetic octapeptide surrogate of somatostatin which is 40 times more potent in suppressing GH and prolactin secretion.
- It is also a weak inhibitor of insulin secretion.

Uses :

- Acromegaly
- Secretory diarrhea associated with carcinoids, AIDS, cancer chemotherapy or diabetes.

449. Which of the following pairs is correct?

a) Glibenclamide - Na' ATP blocker

b) Biguanides - AMP Kinase activation

c) Vildagliptin - SGLT2 inhibitor

d) Voglibose - DPP4 inhibitor

Correct Answer - B

Ans. B. Biguanides - AMP Kinase activation

[Ref Katzung 11th/e p. 741]

- Biguanide acts as an AMP-activated protein kinase (AMPK) activator.
- Activation of AMPK has a high number of potentially antiatherosclerotic effects, including reducing inflammatory cell adhesion to blood vessel endothelium & reducing lipid accumulation.

450. Mechanism of action of sulfonylureas is ?

a) Na ATP channel blocker

b) K ATP channel blocker

c) CI ATP channel blocker

d) Ca ATP channel blocker

Correct Answer - B

Ans. B. K ATP channel blocker

[Ref KDT 7th/e p. 270, 274]

- Sulfonylureas provoke a brisk release of insulin from pancreas.
- They act on the so called "Sulfonylurea receptors" (SUR1) on pancreatic (beta-cell membrane - cause depolarization by reducing conductance of ATP sensitive K. channels.
- This enhances influx of Ca'2-- degranulation.
- They do not cause hypoglycemia in pancreatectomized animals and type 1 diabetes (Presence of at least 30% of functional [3-cells in essential for their action).
- A minor action reducing glucagon secretion by increasing insulin and somatostatin release has been demonstrated.

451. Nasally acting GnRH analogue is ?

a) Goserelin

b) Triptorelin

c) Nafarelin

d) Leuprolide

Correct Answer - C
Ans. C. Nafarelin
[Ref KDT 7thie p. 242]

- GnRH analogues are used by SC route, however nafarilin and busurelin can be used as intranasal spray.
- GnRH analogues can cause hot flushes, loss of libido and osteoporosis.

452. Which of the following is/ are side effect/s of growth hormone administration?

a) Pain at injection site

b) Glucose intolerance

c) Hypothyroidism

d) All the above

Correct Answer - D

Ans. D. All the above

[Ref KDT &hie p. 234] Adverse effects of growth hormone

- Somatropin and somatrem are recombinant GH analogues.
- Somatrem has an additional methionine residue and is more immunogenic than somatropin, but allergic reactions or resistance to treatment are not a problem.
- Pain at injection site and lipodystrophy can occur.
- Glucose intolerance, hypothyroidism (due to unmasking of TSH deficiency), salt and water retention, hand stiffiress, myalgias, headache are the possible adverse effects
- Rise in intracranial tension occurs in few cases.

453. Which of the following drugs halts macrovascular as well as microvascular effects of DM?

a) Acarbose

b) Biguanides

c) Meglitinide

d) Algaliptin

Correct Answer - B
Ans. B. Biguanides
[Ref KDT Th/e p. 276] Biguanides]
* Biguanides like metformin are the 1st line drugs for the treatment of Type 2 DM, which acts by AMPK activation.
* Advantages of Biguanides are as follows,
  - Non hypoglycemic.
  - Promotes weight loss.
  - Prevents macro as well as microvascular complications of DM.

454. Which of the following are naturally occurring opioid?

a) Di acetyl morphine

b) Ethyl morphine

c) Morphine

d) Pholcodeine

Correct Answer - C
Ans. C. Morphine
[Ref KDT 7"/e p. 474]
Classification of opioids :

- Naturally occurring opium alkaloids :- Morphine, codeine
- Semi synthetic opiates : - Diacetyl morphine (heroin), pholcodeine and ethylmorphine.
- Synthetic opioids :- Pethidine (Meperidine), fentanyl, methadone, dextropropoxyphene, tramadol.

455. Most potent opioid is ?

a) Butorphanol

b) Pentazocine

c) Sulfentanyl

d) Hdrocodone

Correct Answer - C
Ans. C. Sulfentanyl
[Ref KDT p. 476]
The order of potency of opioids:

- Sufentanil > Fentanyl > Buprenorphine > Hydromorphone, Oxymorphone > Butorphanol > Levorphenol > Oxycodone > Hydrocodone > Nalbuphine, morphine, Methadone > Pentazocine > codeine > Mepridine (Pethidine) > Propoxyphane.

456. All of the following pairs are correct except ?

a) Peripheral decarboxylase inhibitor - Benserazide

b) MAO - B inhibitor - Clorgyline

c) COMT inhibitor - Entacapone

d) Dopamine facilitation - Amantadine

Correct Answer - B
Ans. B. MAO - B inhibitor - Clorgyline
[Ref: KDT Thle p. 439 & &le p. 439; Katzung 11th/e p. 513]
Note: Clorgyline is a MAO A inhibitor not MAO B.

457. Which of the following is used for the patient on antiparkinsonian medication levodopa + carbidopa, but patient showing marked on - off effect?

a) Bromocriptine

b) Amatidine

c) Selegeline

d) Rimonabant

Correct Answer - C
Ans. C. Selegeline
[Ref: Harrison 18th/e p. 3326, 3327]

- If there is wearing off (on -off effect) COMT inhibitor or MAO-B inhibitor (selegiline) is added

458. Which of the following is not true about benzodiazepines?

a) Can produce ataxia

b) Has GABA facilitatory but no GABA mimetic action

c) REM, and Stage 3 and 4 sleep is increased

d) Produces muscle relaxation by action on medulla

Correct Answer - C

Ans. C. REM, and Stage 3 and 4 sleep is increased

Ref: KDT 6th/e p. 394 & 5th/e p. 317, 363]

Mechanism of action of benzodiazepines (BZDs):

- Muscle relaxation is produced by action on medulla.
- Ataxia is due to action on cerebellum.
- BZDs acts on GABAA receptors.

Effect on CNS:

- In contrast to barbiturates, BZDs are not general depressant, but exert relatively selective anxiolytic, hypnotic, muscle relaxant and anticonvulsant effects.
- The antianxiety action of BZDs is not dependent on their sedative property - with chronic administration relief of anxiety is maintained, but drowsiness wanes off due to development of tolerance.
- Stage 2 sleep is increased, while REM, Stage 3 & 4 sleep are decreased.

459. Which of the following is not true about barbiturate?

a) Shows GABA mimetic action

b) Shows GABA facilitatory action

c) It can depress voltage gated Na·- and IC' channels at high concentrations

d) Limbic system is most sensitive to the depressive action of barbiturates to CNS

Correct Answer - D

Ans. D. Limbic system is most sensitive to the depressive action of barbiturates to CNS

[Ref KDT 7th/e p. 399 & 6th/e p. 391]

Action on CNS:

- Barbiturates act primarily at the GABA - BZD receptor - Cl channel complex and potentiate GABAergic inhibition by increasing the lifetime of Cl- channel opening caused by GABA (Contrast benzodiazepines which enhance frequency of CI channel opening) - GABA facilitatory action.
- Barbiturates depress all areas of CNS, but the reticular activating system is most sensitive.

460. Which of the following can be used in the management of tardive dyskinesia ?

a) Cessation of antipsychotic medication

b) Baclofen

c) Tetrabenazine

d) All the above

Correct Answer - D

Ans. D. All the above

[Ref KDT 7th/e p. 445, Harrisons 18th/e p. 3333]

Tardive Dyskinesia:

- Commonest of the tardive syndromes and is typically composed of chore form movements involving the mouth, lips, and tongue.
- Atypical antipsychotics (e.g., clozapine, risperidone, olanzapine, quetiapine, ziprasidone, and aripiprazole) are associated with a significantly lower risk of TD in comparison to traditional antipsychotics.
- Treatment primarily consists of stopping the offending agent.
- If the patient is receiving a traditional antipsychotic and withdrawal is not possible, replacement with an atypical antipsychotic should be tried.
- In refractory cases, catecholamine depleters such as tetrabenazine may be helpful. Tetrabenazine can be associated with dose dependent sedation and orthostatic hypotension.
- Other approaches include baclofen (40-80 mg/d), clonazepam (1-8 mg/d), or valproic acid (750-3000 mg/d).

461. Temazepam is superior to diazepam in ?

a) Longer duration of action

b) Safely used in liver failure

c) No active metabolite required.

d) High hepatic metabolism

Correct Answer - B:C
Ans. B. Safely used in liver failure & C. No active metabolite required.
[Ref KDT 7'/e p. 405]
Temazepam

- Intermediate acting benzodiazepine.
- Its metabolism is independent of liver and hence, can be safely given in patients with hepatic failure.
- Temazepam does not have an active metabolite like diazepam [Note: Diazepam is converted to an active metabolite `desmethyl diazepam' (oxazepam)].

462. Drug contraindicated in absence seizures is

a) Lamotrigine

b) Clonazepam

c) Tiagabine

d) Ethosuximide

Correct Answer - C

Ans. C. Tiagabine

- Carbamazepine, vigabatrin, and tiagabine are contraindicated in the treatment of absence seizures, irrespective of cause and severity.

463. Mechanism of action of tianeptin is :?

a) Increase 5HT uptake

b) Decrease 5HT uptake

c) Increase DA uptake

d) Decrease DA uptake

Correct Answer - A
Ans. A. Increase 5HT uptake
[Ref KDT 7th/e p. 447]
Tianeptin

- **Atypical anti - depressant**
- Increases 5HT uptake and is neither sedative nor stimulant.
- Shown efficacy in anxio-depressive states, particularly with psychosomatic symptoms, as well as endogenous depression.
- Side effects include: dry mouth, epigastric pain, flatulence, drowsiness/insomnia, tremor and the bodyache.

464. Venalafaxine is an FDA approved drug for the treatment of ?

a) Major depression

b) Generalised anxiety disorder

c) Panic disorder

d) All the above

Correct Answer - D
Ans. D. All the above
[Ref Medical basis of psychiatary by S Hossein, p. 79]
Venlafaxine

- It is serotonin and noradrenaline reuptake inhibitors (SNRI), but in contrast to older TCAs it does not interact with cholinergic, adrenergic, histaminergic receptors and does not have sedative property.
- It is faster acting (other faster acting antidepressants are bupropion and mirtazapine).
- It raises the BP (all other antidepressants cause hypotension).
- It is FDA approved for use in major depression, generalized anxiety disorder, and panic disorder.

465. FDA approved drug for refractory schizophrenia ?

a) Amoxapine

b) Haloperidol

c) Clozapine

d) Penfluridol

Correct Answer - C
Ans. C. Clozapine
[Ref KDT rie p. 441]

- Clozapine is FDA approved drug for resistant schizophrenia
- It reduces the risk of sucidal behavior in younger patients with schizophrenia.

466. True about anti - Parkinson drug levodopa is :?

a) Levodopa is an active metabolite of dopamine.

b) About 50% of administered levodopa is peripherally converted to carbidopa.

c) About 2% of the administered levodopa crosses blood brain barrier.

d) Levodopa has no role in hepatic coma.

Correct Answer - C

Ans. C. About 2% of the administered levodopa crosses blood brain barrier.

[Ref KDT 7th/e p. 426]

Levodopa:

- Levodopa is inactive by itself, but is the immediate precursor of the neurotransmitter dopamine.
- 95% of the oral dose is decarboxylated in the peripheral tissues.
- About 1 - 2% of the administered levodopa crosses the blood brain barrier to reach the brain, which is taken up by the surviving dopaminergic neurons and converted to dopamine.
- The stimulation of excitatory DI as well as the inhibitory D2 receptors in striatum achieves the same net effect of smoothening movements and reducing muscle tone.
- It produces a non-specific 'awakening' effect in the hepatic coma.

467. Which of the following is true about ziprasidone?

a) Profound extrapyramidal symptoms

b) Causes weight loss

c) Has anti - depressant properties

d) Safe in cardiac patients.

Correct Answer - C
Ans. C. Has anti - depressant properties
[Ref KDT 7th/e p. 442]
Ziprasidone:

- Atypical anti - psychotic
- It has a 5 H1 + 5HT2 + D2 blocking activity with antagonism at 5HT1D and agonist at 5HT1A.
- Being atypical it is free from extrapyramidal side effects (EPS) and has got good anxiolytic and anti depressant properties.
- It causes mild weight gain and hyperglycemia and causes QTc prolongation and serious cardiac arrhythmias.

468. Which of the following nephrotoxic drugs should be completely avoided in renal failure?

a) Doxycycline

b) Talampicillin

c) Nitrofurantoin

d) Nalidixic acid

Correct Answer - B:C:D

Ans. B,Talampicillin C.Nitrofurantoin & D.Nalidixic acid

Drugs to be avoided in renal patients:

- Cephalothin
- Talampicillin
- Nalidixic acid
- Tetracyclines (except doxycyline)
- Nitrofurantoin

469. The typical maintence dose of Leveteracetam is?

a) 10 - 20 mg/ Kg/day

b) 20 - 30 mg/ Kg/day

c) 30 - 40 mg/ Kg/day

d) 40 - 50 mg/ Kg/day

Correct Answer - C
Ans. C. 30 - 40 mg/ Kg/day
[Ref KDT 7hle p. 420]
Levetiracetam

- Unique anti - convulsant which has shown efficacy in refractory partial seizures with or without generalization.

Dosage:

- The recommended starting dose is 10 mg/ Kg/ day given twice daily.
- The dosage can be increased weekly or biweekly by 10mg/ Kg/ day.
- The typical maintenance dose is 30 - 40 mg/ Kg/ day.

470. Botulinum toxin is used in treatment of ?

a) Axillary hyperhidrosis

b) Blepharospasm

c) Cervical dystonia

d) All of the above

Correct Answer - D
Ans. D. All of the above
[Ref KDT 7th/e p. 99]

- Botulinum toxin A and B are highly potent exotoxins produced by Clostridium botulinum which causes `botulinum' by inhibiting Ach release.
- It is used in treatment of blepharospasm, spastic cerebral palsy, strabismus, spasmodic torticollis, nystagmus, hemifacial spasm, axillary hyperhidrosis, spastic cerebral palsy which is due to cholinergic excess.
- It has also been used for facial wrinkles.

471. Which of the following antipsychotics show partial D2 agonist activity?

a) Aripiprazole

b) Clozapine

c) Quetiapine

d) Ziprasidone

Correct Answer - A
Ans. A. Aripiprazole
[Ref Goodman 6 Gillman 1 p. 464, 465, 466; Katzung 11'"/e p. 495]
Aripiprazole:

- Only antipsychotic with D2 agonistic activity. (all others are D2 antagonists).
- Longest acting
- It also has 5HT1A agonistic and 5HT2 antagonistic activity - Also known as dopamine-serotinine stabilizer.
- It is least sedating antipsychotic can cause insomnia.

472. Which drug is given in the pain due to diabetic neuropathy?

a) Lamotrigine

b) Na valproate

c) Gabapentin

d) Morphine

Correct Answer - C
Ans. C. Gabapentin
[Ref KDT 7th/e p. 409]
Gabapentin

- This is lipophilic GABA derivatve.
- Gabapentin enhances GABA release but itself does not act as a agonist at the GABAA receptor.
- It crosses to the brain and enhances GABA release but does not act as agonist at GABAA receptor.
- Gabapentin is considered to be a first line drug for pain due to diabetic neuropathy and postherpetic neuralgia.

Uses

- GTCS and partial seizures
- Pain due to diabetic neuropathy
- Postherpetic neuralgia
- Prophalaxis of migraine

473. Topical antifungal of choice for aspergillus infection of eye is ?

a) Miconazole

b) Clotrimazole

c) Econazole

d) Fluconazole

Correct Answer - B
Ans. B. Clotrimazole
[Ref Khurana Ophthalmology 4th/e p. 422]
Clotrimazole:

- Fungistatic and is effective against Candida, Aspergillus and many others.
- Its 1 percent suspension is effective topically and is the treatment of choice in Aspergillus infections of the eye.

474. Which of the following is a topical antifungal agent?

a) Benzyl benzoate

b) Brimetenide

c) Butenafine

d) Posconazole

Correct Answer - C
Ans. C. Butenafine
[Ref KDT 7thie p. 796]
Butenafine:

- Butenafine is a benzylamine congener of the terbinafine, which acts by inhibiting the enzyme squalene epoxidase.
- Used only topically for treatment of dermatophytosis.
- Efficacy in tinea cruris/corporis/pedis is similar to that of terbenafine.

475. Fastest acting anti malarial drug is ?

a) Chloroquine

b) Quinine

c) Mefloquine

d) Artether

Correct Answer - D
Ans. D. Artether
[Ref Harrisons 18th/e p. 26-2]
Artemisinin derivatives:

- Artesunate, artemether, arteether, and the parent compound artemisinin are sesquiterpene lactones derived from the wormwood plant Artemisia annua.
- These are the fastest acting erythrocytic schizontocide.

476. Which of the following increases Amphoterecin B induced nephrotoxicity?

a) Vancomycin

b) Cyclosporin

c) Acyclovir

d) All the above

Correct Answer - D

Ans. D. All the above

[Ref Katzung 11th/e p. 836]

- "Aminoglycosides. vancomycin, cyclosporine er other nephrotoxic drugs enhance renal impairment caused by AMB"
- Risk factors for amphotericin B induced nephrotoxicity

Following risk factors increase the chances of nephrotoxicity caused by amphotericin:

- Concomitant use of diuretics.
- Abnormal baseline renal function (kidney diseases)
- Dehydration (volume depletion):- It is a key factor for the renal tolerance of all the potential nephrotoxic drugs. Therefore, all patients should receive 1-2 liters of isotonic saline prior to amphotericin B infusion.
- Concomitant use of nephrotoxic drugs:- Aminoglycosides, vancomycin, cyclosporine, tacrolimus (FK-506), acyclovir, NSAIDS, radio-contrast agents
- Higher average daily dose of amphotericin B.

477. Erythromycin is used in the treatment of which GIT disorder?

a) Bacillary dysentery

b) Amoebic dysentery

c) Diabetic gastroparesis

d) Ulcerative colitis

Correct Answer - C

Ans. C. Diabetic gastroparesis

[Ref KDT 7h/e p. 753]

Erythromycin:

- Macrolide antibiotic.
- Erythromycin stimulates motilin (an upper gastrointestinal peptide hormone) receptors in the GIT which induces gastric contractions, hastens gastric emptying and promotes intestinal motility without significant effect on colonic motility.
- It has been occasionally used to afford short term symptomatic relief in diabetic gastroparesis, however, undesirable alteration of gut flora limits its use.

478. Which macrolide is active against Mycobaterium leprae?

a) Azithromycin

b) Roxithromycin

c) Clarithromycin

d) Framycetin

Correct Answer - C
Ans. C. Clarithromycin
[Ref KDT 7th/e p. 754, 780, Harrisons 18thie p.1364-65]

- Clarithromycin is a newer macrolide, which is effective against MAC (Mycobacterium avium complex), atypical mycobacteria and Mycobacterium leprae.

479. Ivermectin is the drug of choice for which of the following infections?

a) Trichuriasis

b) Onchocerciasis

c) Loiasis

d) Trichinosis

Correct Answer - B
Ans. B. Onchocerciasis
[Ref KDT 7h/e p. 853]
Ivermectin:

- Extremely potent semisynthetic derivative of nematodal principal obtained from Streptomyces avermitilis.
- DOC for single dose treatment of onchocerciasis and strongyloidosis.
- Only oral drug effective against scabies and pediculosis.
- Acts by glutamate gated CI- channel which causes tonic paralysis in nematodes.

480. Which of the following causes retinal pigmentation?

a) Quinine

b) Chloroquine

c) Mefloquine

d) Atovaquone

Correct Answer - B
Ans. B. Chloroquine
[Ref KDT 7thie p. 823]
Chloroquine:

- 1st line anti malarial drug, which is an erythrocytic schizonticide.
- However, its prolonged use of high doses (as in DLE, rheumatoid arthritis) may cause loss of vision due to retinal damage in the form of retinal pigmentation.
- Cause corneal deposits and affect vision and are reversible on discontinuation.
- Loss of hearing, rashes, photoallergy, myopathy, graying of hair may occur.

481. Mechanism of action of Linezolid is :?

a) Inhibits 30S ribosome subunit of 50S ribosome

b) Inhibits 23S ribosome subunit of 50S ribosome

c) Inhibits 5S ribosome subunit of 50S ribosome

d) Inhibits 5PS. ribosome subunit of 50S ribosome

Correct Answer - B
Ans. B. Inhibits 23S ribosome subunit of 50S ribosome
[Ref KDT 7111e p. 758]
Linezolid:

- An `oxazole dianones' useful in treatment of MRSA and some VRSA strains
- It acts by inhibiting bacterial protein synthesis by binding to 23S fraction of 50S ribosome.
- Binding of the linezolid distorts the tRNA binding site overlapping both 50S and 30S ribosomal subunits and stops the protein synthesis.
- It is a predominantly bacteriostatic drug.

482. Which of the following is not true about levamisole?

a) It is the levoisomer of tetramisole

b) It has immunomodulator action

c) It can kill strongyloides larvae and adult worms

d) It is used against ascariasis and ancyclostomiasis

Correct Answer - C

Ans. C. It can kill strongyloides larvae and adult worms

[Ref KDT 7ffile p. 852]

Levamisole, Tetramisole:

- Tetramisole was developed in the late 1960s.
- It is recemic; its levo isomer (levamisole) was found to be more active and is preferred now.
- Both are active against many nematodes, but use is restricted to ascariasis and ancylostomiasis, because action on other worms is poor.
- Strongyloides larvae are killed, but adult worms are not sensitive.
- The ganglia in worms are stimulated causing tonic paralysis and expulsion of live worms.
- Interference with carbohydrate metabolism (inhibition of fumarate reductase) may also be contributing.
- Levamisole is an immunomodulator as well. Levamisole restores depressed T cell function.
- It was once used as a disease modifying drug in rheumatoid arthritis and as an adjunct in malignancies, aphthous ulcers, recurrent herpes but repeated doses produce reactions and now it has been withdrawn.

483. Which of the following is a side effect of clofazimine?

a) Reddish black skin discoloration

b) Hemolytic anaemia

c) Flu like syndrome

d) Axillary freckling

Correct Answer - A
Ans. A. Reddish black skin discoloration
[Ref KDT 7th le p. 781, 782]
Clofazamine:

- 1st line anti - leprotic drug
- Dye with leprostatic and anti - inflammatory properties.
- Gets accumulated in macrophages and gets deposited in many tissues. Including subcutaneous fat as needle shaped crystals responsible for reddish black skin discoloration.
- Discoloration of skin, hair and body secretions may occur.
- Conjunctival pigmentation may also occur.

484. For systemic mycosis fluconazole is preferred over ketoconazole because of -

a) Greater efficacy

b) Longer t 1/2

c) Lesser side effects

d) All the above

Correct Answer - D
Ans. D. All the above
[Ref KDT &le p. 761]
Imidazoles and Triazoles:

- These are presently the most extensively used antifungal drugs.
- Four imidazoles are entirely topical, while ketoconazole is used both orally and topically.
- Two triazolesfluconazole and itraconazole have largely replaced ketoconazole for systemic mycosis because of greater efficacy, Longer t 1/2, fewer side effects and drug interactions.
- The imidazoles and triazoles have broad spectrum antifungal activity covering dermatophytes, Candida, other fungi involved in deep mycosis (except mucor), Nocardia, some gram positive and anaerobic bacteria, e.g. Staph. aureus, Strep. faecalis, Bac. fragilis and Leishmania.
- The mechanism of action of imidazoles and triazoles is the same. They inhibit the fungal cytochrome P450 enzyme lanosterol 14-demethylase' and thus impair ergosterol synthesis leading to a cascade of membrane abnormalities in the fungus.
- The lower host toxicity of triazoles compared to imidazoles has correlated with their lower affinity for mammalian CYP450 enzymes and lesser propensity to inhibit mammalian sterol synthesis.

- However, because they are active against certain bacteria as well (which do not have ergosterol), other mechanisms of action also appear to be involved.

485. INH hepatotoxicity is due to which compound?

a) INH acetylhydrazine

b) INH sulfhydrazine

c) INH methylhydrazine

d) All of the above

Correct Answer - A

Ans. A. INH acetylhydrazine

[Ref KDT 7th le p. 767]

- INH is extensively metabolized in liver, most important pathway being N - acetylation by NATZ.
- The rate of INH acetylation shows genetic variation with some being
- Fast acetylators - 30 to 40% patients.
- Slow acetylators - 60 to 70% patients.
- Isoniazid induced peripheral neuritis is more common in slow acetylators.
- Hepatotoxic minor metabolite is produced by CYP2E1 from acetylhydrazine.

486. Mechanism of action of Niclosamide is :?

a) Inhibition of substrate level phosphorylation

b) Inhibition of oxidative phosphorylation

c) Inhibition of proton efflux pumps

d) Increase production of free radicals

Correct Answer - B

Ans. B. Inhibition of oxidative phosphorylation

[Ref KDT 7th/e p. 854]

- Niclosamide acts by inhibiting oxidative phosphorylation in mitochondria and by interfering with anaerobic generation of ATP.
- It is mainly active against cestodes - T. solium, T. saginata, Diphyllobothrium latum and H. nana.

487. What is the effect of co administration of rifampicin and ritonavir in patients suffering from AIDS?

a) Area Under Curve decreased by 15%

b) Area Under Curve decreased by 35%

c) Area Under Curve increased by 15%

d) Area Under Curve increased by 35%

Correct Answer - B

Ans. B. Area Under Curve decreased by 35%

[Ref Kucers: the use of antibiotics 6th edn by M Lindsay Grayson p.1598]

Co administration of ritonavir with rifampicin:

- Recommendation is to use the combination with caution.
- Area under curve decreased by 35%
- There is no change in rifampicin concentration
- It is recommended to monitor the antiretroviral activity of ritonavir

488. Drug of choice for surgical prophylaxis is :?

a) Cefaclor

b) Ceftizoxime

c) Cefazolin

d) Cefoperazone

Correct Answer - C
Ans. C. Cefazolin
[Ref KDT 7th/e p. 726]

- Cefazolin is the prototype 1st generation cephalosporin that is active against PnG sensitive organisms ie streptowcce, gonococci and group.
- It is the preferred parenteral first generation cephalosporin for surgical peophylaxis.

489. Vapiprost is a ?

a) Thromboxane receptor antagonist

b) Thromboxane synthetase antagonist

c) PGE 1 analogue

d) PGI 2 analogue

Correct Answer - A
Ans. A. Thromboxane receptor antagonist
[Ref Internet ncbi article]
Vapiprost:

- Novel congener, which is a recently developed thromboxane receptor antagonist.
- It prevents platelet aggregation, prevents thrombus formation and thereby preventing vessel occlusion.
- It is usually used alongwith rt PA like alteplase, renecteplase, tenecteplase.

490. Treatment of clopidogrel toxicity can be done with ?

a) Whole human blood

b) Platelet transfusion

c) vWf transfusion

d) rFVIIa infusion

Correct Answer - D

Ans. D. rFVIIa infusion

- rFVIIa (Recombinant factor Vila) has been shown to restore thrombin generation in clopidogrel treated blood samples, and shorten thrombin generation lag time in patients who had been treated with aspirin and clopidogrel, and in blood samples treated with clopidogrel's active metabolite.
- Thus they can be used for the management of clopidogrel toxicity induced bleeding i.e. can be used to reverse the effects of clopidogrel.

491. Why is clopidogrel preferred over ticlopidine?

a) Lower incidence of neutropenia and thrombocytopenia

b) Lower incidence of dyslipidemia

c) Lower incidence of hyperglycemia

d) Lower incidence of postural hypotention

Correct Answer - A

Ans. A. Lower incidence of neutropenia and thrombocytopenia

[Ref KDT 6thie p. 610]

Clopidogrel:

- This newer congener of ticlopidine has similar mechanism of action, ability to inhibit platelet function and therapeutic efficacy, but appears to be safer and better tolerated (CLASSICS study).
- Clopidogrel is safer than ticlopidine as it is less associated with hematological dyscrasias than use of ticlopidine.
- A lower frequency of neutropenia, thrombocytopenia and other bone marrow toxicity compared to ticlopidine has been recorded.
- The clopidogrel as aspirin in patients at risk of ischaemic events (CAPRIE) trial has found clopidogrel recipients to have a slightly lower annual risk of primary ischaemic events than aspirin recipients.

492. Which of the following antilipidemic drug is a sterol absorption inhibitor?

a) Gemfibrozil

b) Simvastatin

c) Nicotinic acid

d) Ezetimibe

Correct Answer - D
Ans. D. Ezetimibe
[Ref KDT 7th/e p. 635] 3

- Classification of antihyperlipidemic drugs
  HMG CoA reductase inhibitor:
- Statins: Lovastatin, Simvstatin, Pravastatin, Atorvastatin, Rosuvastatin
- Bile acid sequestrants
  Resins: Colestipol, Cholestyramine
- LPL activator/PPAR alpha activator - Clofibrate, gemfibrozil, fenofibrate.
- Sterol absorption inhibitor - Ezetimibe
- Lipolysis & TG synthesis inhibitor - Nicotinic acid

493. Mechanism of action of Torcetraprib is ?

a) Bile acid sequestrant

b) Sterol absorption inhibitor

c) Lipoprotein lipase activator

d) CETP inhibitors

Correct Answer - D
Ans. D. CETP inhibitors
[Ref: KDT 7h le p. 641]
CETP Inhibitors:

- CETP, i.e., Cholesteryl ester transfer proteins inhibitors are class of cholesterol lowering agents.
- CETP facilitates exchange of CHE with T4 between HDL and chylomicrons, VLDL and LDL which plays an important role in the disposal of HDL associated CH.
- Examples of CETP inhibitors: Torcetrapib & Anacetrapib
- Clinical trials have been performed and torcetrapib was found to increase occurrence of cardiovascular events like angina, MI, heart failure and death.

494. Most potent H2 antagonist is :?

a) Ranitidine

b) Cimetidine

c) Famotidine

d) Nizatidine

Correct Answer - C

Ans. C. Famotidine

[Ref KDT 7h /e p. 650 & 6th le p. 629; Katzung 1 lth le p. 1070]

H2-receptor antagonists

- Drugs in this group are cimetidine, ranitidine, famotidine, roxatidine, nizatidine and loxatidine.
- Famotidine is the most potent H2 blocker. Famotidine has some inverse agonistic action on H2 receptors.
- All H2-blockers are competitive blockers except famotidine (competitive - noncompetitive) and loxatidine (non competitive).
- H2 blockers are usually given for 6-8 weeks.

495. Not an adverse effect of cimetidine ?

a) Confusional state, restlessness

b) Gynecomastia

c) Dry mouth

d) Decreased prolactin levels

Correct Answer - D
Ans. D. Decreased prolactin levels
[Ref: KDT 7h/e p. 650]
Cimetidine:

- H2 blocker which has been replaced by new congeners due to its many adverse effects. Following are its adverse effects :
- Well tolerated by most patients: adverse effects occur in < 5%. These are generally mild.
- Headache, dizziness, bowel upset, dry mouth, rashes.
- CNS effects like confusional state, restlessness, convulsions and coma have occurred infrequently in elderly patients, in those with renal impairment, especially with large doses infused

496. Use of metoclopramide beyond weeks increases the chances of tardive dyskinesia ?

a) 8

b) 12

c) 16

d) 20

Correct Answer - B
Ans. B. 12
[Ref Pharmacology and physiology for anesthesia by Hugh E. Hemmings p. 511]
FDA has issued a black box warning for metoclopramide, given the high isk of developing tardive dyskinesia if metoclopramide use extends beyond 12 weeks.

497. The two molecules of Aminosalicylate coupled via azo bond form?

a) Mesalazine

b) Olsalazine

c) Balsalazine

d) Sulfasalazine

Correct Answer - B
Ans. B. Olsalazine
[Ref KDT 7h/e p. 684]

- Olsalazine – 2 molecules of aminosalicylate (ASA) coupled by azo bonds.
- Balsalzine 5ASA linked to 4 – aminobenzoyl - (3 alanine.
- Sulfasalazine 5ASA linked to sulfapyridine by azo bond.
- Mesalazine : - pH coated tablet of 5ASA

498. Natural anticancer drug is ?

a) Paclitaxel

b) Methotrexate

c) Cyclophosphomide

d) All of the above

Correct Answer - A

Ans. A. Paclitaxel

[Ref Goodman & Gilman 11th/e p. 1350-1354; Katzung 1 p. 949]

Antimitotic drugs of natural (plant) sources.

- Vincristine
- Vindesine
- Paclitaxel
- Vinblastine
- Vinorelbine
- Dacetaxel

Other natural anticancer drugs are

- Epipodophyllotoxins (Etoposide)
- Bleomycin
- Anthracyclins (Doxorubicin, daunorubicin)
- Camptothecins
- Mitomycin 'C'
- Actinomycin 'D'

499. Drug acting on 'S' phase of cycle ?

a) Chlorambucil

b) Methotrexate

c) Vincristine

d) Paclitaxel

Correct Answer - B

Ans. B. Methotrexate [Ref KDT 7"le p. 823]

Cell cycle specific

- They kill actively cycling cell and their site of action is confined to one phase of the cell cycle.

Drugs causing cell cycle specific inhibition are given below :

- G, phase : Vinblastine
- S phase : Mtx, cytarabine, 6-TG, 6-MP, Hydroxyurea, mitomycin
- G2 phase : Bleomycin, etoposide, Daunorubicin, Topotecan
- M phase : Vincristine, vinblastine, paclitaxel, dacetaxel, Ixabepilone, Estramustine.

500. Mechanism of action of aprepitant is ?

a) RANK ligand inhibitor

b) MMDA antagonist

c) NK 1 receptor antagonist

d) 5 HT3 antagonist

Correct Answer - C
Ans. C. NK 1 receptor antagonist
[Ref Goodman & Gillman's 11`" /e p.1005]
Aprepitant

- Aprepitant is an antiemetic substance that belongs to a class of drugs called substance P antagonists.
- The compound mediates its effect by blocking the neurokinin 1 (NK1) receptor.
- Aprepitant crosses the blood brain barrier.
- Aprepitant is used for chemotherapy induced nausea & vomiting (CINV), and post- operative nausea & vomiting (PONY).
- After absorption aprepitant is bound extensively to plasma proteins (>95%); it is metabolized avidly, primarily by hepatic CYP 3A4 and is excreted in the stools.

501. Use of HAART is associated with hepatotoxicity approximately what percentage of patients?

a) 10%

b) 20%

c) 30%

d) 40%

Correct Answer - A
Ans. A. 10%
[Ref Harrisons 18th/e p. 2566]
Highly Active Antiretroviral Therapy (HAART):

- Combination antiretroviral therapy (cART), also referred to as highly active antiretroviral therapy (HAART), is the cornerstone of management of patients with HIV infection.
- Indirect hyperbilirubinemia, resulting from direct inhibition of bilirubinconjugating activity by UDP-glucuronosyltransferase, usually without elevation of aminotransferase or alkaline phosphatase activities, occurs in -10% of patients treated with the protease inhibitor indinavir.

502. Bendamustine is useful for the management of ?

a) Chronic lymphoid leukemia

b) Colon carcinoma

c) Breast carcinoma

d) Renal carcinoma

Correct Answer - A

Ans. A. Chronic lymphoid leukemia

[Ref Hematology Basic principles and practice by Ronald Hoffman, p. 819]

Bendamustine

- It is a chemotherapy medication used in the treatment of chronic lymphocytic leukemia (CLL), multiple myeloma, and non-Hodgkin's lymphoma.
- It works by interfering with the function of DNA and RNA

503. Abraxane is a :?

a) Albumin bound docetaxel

b) Globulin bound docetaxel

c) Albumin bound paclitaxel

d) Globulin bound paclitaxel

Correct Answer - C
Ans. C. Albumin bound paclitaxel
[Ref Katzung 11thle p. 1235]

- Abraxane is a novel albumin bound paclitaxel which has got lesser propensity to cause hypersensitivity reactions than paclitaxel.
- Abraxane is use in the treatment of the advanced metastatic breast carcinoma patients.
- Paclitaxel acts by inhibiting microtubulin polymerization and inhibits division of metastatic cells.

504. Abatacept binds to on T cell surface

a) CD I I

b) CD 20

c) CD 22

d) CD 28

Correct Answer - D
Ans. D. CD 28
[Ref Katzung 11th/e p. 634]
Abatacept

- It is a fusion protein that combines the extracellular domain of the molecule CTLA4 (CD 154) with the Fc portion of a human immunoglobulin.
- It interfere with the interactions between antigen presenting cells and T lymphocytes.
- Therefore, it affects early stages in the pathogenic cascade of event in RA.
- CTLA4 has high affinity for CD 28, when abatacept binds to CD28 on T cell surface, it prevents the second signal from being delivered, thus turning down the T cell response.

505. Cardiotmdcity is the side effect of :?

a) Bleomycin

b) Topotecan

c) Rubidomycin

d) Procarbazine

Correct Answer - C
Ans. C. Rubidomycin
[Ref KDT 7th/e p. 826]
Anthracycline induced cardiotoxicity

- Rubidomycin and doxorubicin are the anthracycline anti - tumor antibiotics
- They have cardiotoxicity as a adverse effect.
- This can manifest either acutely with ECG changes, arrhythmias and hypotension, which are reversible, or be delayed like CHF.

506. Tocilizumab acts as an antagonist at which reeptor -

a) IL I

b) IL 2

c) IL 6

d) TNF

Correct Answer - C
Ans. C. IL 6
[Ref Harrisons 18thiedn p. 2750]

- Tocilizumab is a humanized monoclonal antibody directed against the membrane and soluble forms of the IL-6 receptor.
- IL-6 is a proinflammatory cytokine implicated in the pathogenesis of RA, with detrimental effects on both joint inflammation and damage.
- IL-6 binding to its receptor activates intracellular signaling pathways that affect the acute phase response, cytokine production, and osteoclast activation.

507. Mechanism of action of Basiliximab is ?

a) TNF a inhibitor

b) IL 1 antagonist

c) IL 2 antagonist

d) IL 6 antagonist

Correct Answer - C
Ans. C. IL 2 antagonist
[Ref KDT 7`/e p. 878, 884]
Basiliximab and Daclizumab

- They are highly humanized chimeric monoclonal anti CD 25 antibody which binds to and acts as IL 2 receptor antagonist.
- Combined with other immunosuppressants like azathioprine and MMF to prevent renal and other transplant rejection reactions.
- Plasma t1/2 of Daclizumab is around 3 weeks which is much longer than Basiliximab.

508. Estramustine is a combination of ?

a) Estradiol + normustine

b) Estriol + normustine

c) Estriol + mechloroethamine

d) Estriol + cyclophosphamide

Correct Answer - A
Ans. A. Estradiol + normustine
[Ref KDT 7thie p. 858, 866]
Estramustine

- Complex of estradiol and nitrogen mustard normustine which has weak estrogenic but no alkalyting property.
- It binds to p tubulin and interferes with its organization of microtubules exerting anti - mitotic action.

509. Pemetrexed is indicated for use in which of the following?

a) Mesoepithelioma

b) Non small cell lung carcinoma

c) Ewings sarcoma

d) Osteosarcoma

Correct Answer - A:B

Ans. A.Mesoepithelioma & B.Non small cell lung carcinoma

[Ref: KDT 7th/e p. 858, 863]

- Pemetrexed is a newer congener of methotrexate which primarily targets the enzyme thymidylate synthase.
- Uses: In combination with cisplatin, pemetrexed is approved for treatment of mesoepithelioma and non small cell lung carcinoma.

510. Which of the following is not true about purine antagonists?

a) Azathioprine is used as immunosuppresant

b) Drugs are activated by hypoxanthine guanine phosphoribosyl transferase [HGPRTase]

c) Fludoribine is the drug of choice for CLL

d) Cladarabine is degraded by adenosine deaminase

Correct Answer - D
Ans. D. Cladarabine is degraded by adenosine deaminase
[Ref Katzung Ilth/e p. 948]
Purine antagonists

- 6-mercaptopurine (6-MP), 6-thioguanine, fludarabine and cladarabine are purine analogues that are used in cancer chemotherapy.
- Cladarabine is the DOC for Hairy cell leukemia as it is resistant to degradation by adenosine derminase.

511. Panitumumab is used for which cancer?

a) Colon cancer

b) Lung cancer

c) Breast cancer

d) Osteoclastoma

Correct Answer - A
Ans. A. Colon cancer
[Ref Harrisons 18thie p. 677]
Panitumumab

- It is a monoclonal antibody against EGF receptor. It is used for management of (Colorectal) colon cancer.

512. Cetuximab is used to treat ?

a) Adamantinoma

b) Basal cell Ca

c) Colorectal Ca

d) Crohn's disease

Correct Answer - C
Ans. C. Colorectal Ca
[Ref KDT 7th/e p. 870, Harrisons 18thie p. 677]
Cetuximab

- Cetuximab is EGF (Epithelial growth factor) receptor antibody, which prevents cell growth, proliferation and metastasis.
- It is approved for Head neck and face squamous cell Ca as adjuvant with cisplatin.
- It is also used for EGF receptor +ve colorectal Ca.

513. Which of the following is not an adverse effect of cyclophosphamide?

a) Hemorrhagic cystitis

b) Infertility

c) Bone marrow suppression

d) Diabetes insipidus

Correct Answer - D

Ans. D. Diabetes insipidus

[Ref Harrison 17e/e p. 521; Goodman & Gilman 11th/e p. 1326; Katzung 11tVe p. 941]

Toxicity of Cyclophosphamide

- Bone marrow suppression (relative platelet sparing)
- Pulmonary toxicity
- Cardiac (at higher doses)
- Cystitis
- Infertility
- GI Toxicity
- Alopecia
- Teratogenesis

514. Adverse effect of the imatinib are all except ?

a) Periorbital edema

b) Myalgia

c) Pleural effusion

d) Arthralgia

Correct Answer - D

Ans. D. Arthralgia

[Ref KDT 7th/e p. 870]

- Imatinib is a tyrosine kinase inhibitor, which inhibits PDGF (Platelet derived growth factor) receptor as well.

Uses:

1. CML - Chronic myeloid leukemia
2. DOC for c-kit +ve GIST (Gastrointestinal Stromal Tumor)

Adverse effects :

- Abdominal pain, vomiting, fluid retention, pleural effusion, periorbital edema, myalgia, liver damage and CHF.

515. Defect in discriminating blue green vision is due to which drug :?

a) Alprostadil

b) Primaquine

c) Sildenafil

d) Primaquine

Correct Answer - C
Ans.C. Sildenafil
[Ref KDT 7thle p. 303 - 304]

- Sildenafil (Viagra) acts to increase cGMP by inhibiting its breakdown by phosphodiesterase isoform 5 (PDE-5).
- Recommended that at least 6 hours pass between use of a nitrate and the ingestion of sildenafil.
- Sildenafil also has effects on color vision, causing difficulty in blue-green discrimination.
- Two similar PDE-5 inhibitors, tadalafil and vardenafil, are available.

516. Racecadotril is used for?

a) Chronic diarrhea

b) Acute secretory diarrhea

c) Chronic constipation

d) Diabetic gastroparesis

Correct Answer - B

Ans. B. Acute secretory diarrhea

[Ref: KDT 7th/e p.686]

- Racecadotril is rapidly converted to thiorphan, an enkephalinase inhibitor which prevents the degradation of encephalin (ENK) which are mainly 8 opioid receptor agonists.
- It decreases intestinal hypersecretion without affecting motility and used for short term treatment of acute secretory diarrhea.

517. True about trientene is :

a) It is the drug of first choice in wilsons disease

b) It is more potent curiuretic agent than penicillamine

c) Trientine therapy can cause iron deficiency

d) Trientine cannot be given orally

Correct Answer - C

Ans. C. Trientine therapy can cause iron deficiency

[Ref Harrisons 18thie p. 3189]

Penicillamine Vs trientine in wilson disease

- Penicillamine is the drug of choice for treatment of wilson's disease.
- However, the drug produces undesirable side effects and in some patients become intolerable.
- Trientine is indicated especially in patients who are intolerant to penicillamine.
- Trientine is less potent cupriuretic agent than penicillamine.
- Trientine is orally effective and short acting.
- Trientine may cause iron deficiency; this can be overcome with short course of iron therapy but iron and trientine should not be ingested within 2 hours of each other.

518. Which of the following drugs is associated with priapism?

a) Hydralazine

b) Prazocin

c) Resperidone

d) All the above

Correct Answer - D

Ans. D. All the above

Drugs that may cause priapism:

- Anticoagulants
- Haloperidol
- hydralazine
- Nifedipine
- Olanzapine
- Papaverine
- Phenothiazines
- Phentolamine
- Prazosin
- Risperidone
- Trazodone

519. Which of the following is a Cl- channel activator?

a) Lubriprostone

b) Nefazodone

c) Varenioline

d) Valethamate

Correct Answer - A
Ans. A. Lubriprostone
[Ref Harrisons 18th/e p. 2500]
Chloride Channel Activators

- Lubiprostone is a bicyclic fatty acid that stimulates chloride channels in the apical membrane of intestinal epithelial cells.
- Chloride secretion induces passive movement of sodium and water into the bowel lumen and improves bowel function.
- Lubiprostone is a new class of compounds for treatment of chronic constipation with or without IBS.

520. Which drug is used in the treatment of Type I tyrosinemia?

a) Nitisinone

b) Alogliptin

c) Pemoline

d) Milrinone

Correct Answer - A
Ans. A. Nitisinone
[Ref Nelson 20'Ve p. 641]

- A diet low in phenylalanine and tyrosine can slow but does not halt the progression of the condition.
- The treatment of choice is nitisinone, which inhibits tyrosine degradation at 4-HPPD. This treatment prevents acute hepatic and neurologic crises.
- Although nitisinone stops or greatly slows disease progression, some pretreatment liver damage is not reversible.

521. Modafinil is a drug used in which of the following conditions?

a) Premature ejaculation

b) Premenstrual syndrome

c) Shift work disorder

d) Erectile dysfunction

Correct Answer - C
Ans. C. Shift work disorder
[Ref KDT 7th/e p. 487]
Modafinil

- It is a newer psychostimulant popular with night shift (call centre) workers and people who want to improve alertness and keep awake.
- It is claimed to increase attention span, and improve accuracy compromised by fatigue and sleepiness.
- The approved indications are narcolepsy, sleep apnea syndrome and shift work disorder.

522. Acamprostate is used for ?

a) Alcohol abstinence

b) Nicotine abstinence

c) Opioid abstinence

d) Cocaine abstinence

Correct Answer - A
Ans. A. Alcohol abstinence
[Ref KDT 7th/e p. 393]

- Acamprosate is a weak NMDA receptor antagonist with modest GABAA receptor agonistic activity used for maintenance of alcohol abstinence.
- It has also been found to reduce relapse of drinking behavior.
- It is started immediately after alcohol withdrawal and given at a dose of 666 mg 2 - 3 times a day.
- Loose motion is the most common side effect.

523. Depot preparations are administered by ?

a) Subcutaneous route

b) Intravenous route

c) Intramuscular route

d) Both subcutaneous and intramuscular route

Correct Answer - D

Ans. D. Both subcutaneous and intramuscular route

- A depot injection is an injection, usually subcutaneous or intramuscular, of a pharmacological agent which releases its active compound in a consistent way over a long period of time.
- Depot injections are usually either solid or oil based.

524. If Vmax dec to 80% due to an inhibitor and Km is same as before which is the type of inhibition?

a) Competitive Equilibrium type

b) Non competitive

c) Competitive Non Equilibrium type

d) None of the above

Correct Answer - B

Ans. B. Non competitive

- Decrease in Vmax with no change in Km is seen in Non-competitive inhibition.

525. Approximate dose of drug in a 5 years old child ?

a) Same as adult dose

b) 1/2 of adult dose

c) $^{1}/3$ of adult dose

d) 'A of adult dose

Correct Answer - C

Ans. C. $^{1}/3$ of adult dose

There are three rule's by which drug close in children can calculated by:

1. For children 2 years old and older (Young's rule)
2. For infant and children < 2 years (Fried's rule)
3. Child's dose by weight can be calculated by Clark's rule:

- Child's dose = [Weight (1b)/150] * adult dose.

526. Active substance in Dakins skin dressing agent used in burns is ?

a) Mafenide acetate

b) Silver sulfadiazine

c) Sodium hypochlorite

d) Nystatin

Correct Answer - C

Ans.C. Sodium hypochlorite

- Dakin's skin dressing agent contains sodium hypochlorite'
- It is used for superficial and deep burns.

527. Oxidation of drugs is mainly takes place in?

a) Nucleu

b) Smooth ER

c) Rough ER

d) Cytoplasm

Correct Answer - B
Ans. B. Smooth ER
Most of the microsomal drug metabolizing enzymes (Cyt. P450) are located on smooth endoplasmic reticulum.

528. Alkaline diuresis in acidic drug poisoning is not done in ?

a) Aspirin

b) Methotrexate

c) Morphine

d) Phenobarbitone

Correct Answer - C

Ans.C. Morphine

Acidic drugs (barbiturate, methotrexate, salicylate) are more ionized at alkaline urine and are not absorbed from renal tubules if the urine is alkaline, and their excretion in urine is increased.

Therefore, alkalinization of urine is done by NaHCO2 in poisoning of acidic ilrugs.

529. Permission from DCGI [Drug controller general, India] is needed before which phase of drug trial?

a) Phase 1

b) Phase 2

c) Phase 3

d) Phase 4

Correct Answer - A
Ans,. A. Phase 1
Following are the prerequisites for starting a clinical trial in India:-
1. Permission from DCGI
2. Approval from ethics committee
3. Mandatory registration on the ICMR maintained website wwwctri.in

530. Volume of distribution of a drug is 500 ml and target concentration of drug in blood is 5 g/L. 20% of administered drug is reached to systemic circulation. What will be the loading dose of that drug -

a) 1 gm

b) 5 gm

c) 12·5 gm

d) 25 gm

Correct Answer - C
Ans. C. 12·5 gm
Loading dose = (Target Cp * Vd)/F
Target concentration (Cp) = 5 gm/L
Volume of distribution = 500 ml = 0.5L
F (Fraction of administered drug reaches systemic circulation) = 20Vo = 0.2 5x0.5
So, loading dose = r2.5 gm

531. IC content of Ringer's lactate [mmol/L] ?

a) 130

b) 109

c) 4

d) 50

Correct Answer - C
Ans. C. 4
One liter of Ringer's lactate solution contains :-
1. 130 mEq of sodium ion = 130 mmoVl
2. 109 mEq of chloride ion = 109 mmol/L
3. 28 mEq of lactate = 28 mmol/L
4. 4mEq of potassium ion = 4 mmol/L
5. 3 mEq of calcium ion = 1.5 mmol/L

532. Half life of Nicotine in blood ?

a) 15 minutes

b) 2 hours

c) 5 hours

d) 24 hours

Correct Answer - B
Ans. B. 2 hours
'Nicotine has a half-life of approximately 2 hours (range 1-2 hours).

533. Volume of distribution depends upon all except ?

a) Drug dose

b) Plasma concentration

c) Extent of absorption

d) Half life of drug

Correct Answer - D

AnS. D. Half life of drug

After a drug reaches the blood, it may be distributed to various tissues.

This is determined by a hypothetical parameter, volume of distribution.

Volume that would accommodate all the drug in the body, if the combination throughout was the same as in plasma is called volume of distribution.

Or in simple words, it k the fluid volume that would be required to contain all the administered drug in the body with a concentration equal to plasma.

534. Lorcaserin is used as ?

a) Anti-anxiety

b) Anti-smoking

c) Anti-helminthic

d) Anti-obesity

Correct Answer - D
Ans. D. Anti-obesity
Lorcaserine is selective 5-HT2c agonist which decreases appetite in treatment of obesity.

535. Capecitabine belongs to which class of anticancer drug?

a) Antimetabolite

b) Alkylating agent

c) Nitrogen mustards

d) Vinca alkaloids

Correct Answer - C

Ans. C. Nitrogen mustards

Antimetabolites

- Purine antagonists -Mercaptopurine, Thioguanine, Azathioprine, Fludarabine, Cladaribine
- Pyrimidine antagonists - S-Fluorouracil, Cytosine arabinoside (cytarabine), CaPecitabine, Gemcitabine.
- Folate antagonist- Methotrexate, Pemetrexed.

536. Which antibiotic should not be given after drinking milk?

a) Chloramphenical

b) Tetracycline

c) Erythromycin

d) Sulfonamide

Correct Answer - B
Ans. B. Tetracycline

537. Idoxuridine is used for treatment of ?

a) Influenza

b) RSV

c) HSV

d) HIV

Correct Answer - C
Ans. C. HSV
Idoxuridine is used only topically forkeratoconjunctivitis by HSV'

538. XDR TB is defined as ?

a) MDR plus resistance to fluoroquinolone

b) MDR plus resistance to fluoroquinolone and streptomycin

c) MDR plus resistance to fluoroquinolone and Amikacin

d) MDR plus resistance to Amikacin

Correct Answer - D
Ans. D. MDR plus resistance to Amikacin
MDR is defined as resistance INH and rifampicin with or without resistance to other drugs. XDR is defined as resistance to INH and rifampicin as well as to all fluoroquinolones and one of njectable drugs (capreomycin, kanamycin, amikacin).

539. Longest acting carbapenems ?

a) Imipenem

b) Meropenem

c) Doripenem

d) Ertapenem

Correct Answer - D
Ans. D. Ertapenem
Ertapenem is a long-acting carbepenem with a broad spectrum antimicrobial activity similar to older carbapenems, imipenem and meropenem.
However, unlike imipenem, it has Poor activity against pseudomonas.

540. High volume of distribution depends on ?

a) High plasma protein binding

b) Lipid solubility

c) Elimination

d) Half life

Correct Answer - B

Ans. B. Lipid solubility

[Ref: Clinical pharmacology 3d/e p. 31]

- It a drug has high volume of distribution (> 42L), the drug is thought to be distributed to all tissues of the body, especially fatty tissue.

A given drug will have high volume of distribution, if it has:

- High lipid solubility (non-polar drug)
- Low rate of ionization
- Low plasma protein binding

541. Duration of erythromycin used in treatment of diphtheria is ?

a) 3 days

b) 7 days

c) 14 days

d) 30 days

Correct Answer - C
Ans. C. 14 days
Drug of choice for diphtheria is erythromycin.
Total course of antibiotics is given for 14 days
Alternative antibiotics are penicillin G, clindamycin and rifampir.

542. Drugs used for H. Pylori are all except?

a) Bismuth

b) Amoxicillin

c) Domperidone

d) Clarithromycin

Correct Answer - C
Ans. C. Domperidone
Drugs useful for H. Pylori infection

- Amoxicillin
- Tinidazole/metronidazole
- Omeprazole
- Ranitidine
- Tetracycline
- Bismuth
- Clarithromycin.

543. Drugs which is not metabolized by acetylation ?

a) Dapsone

b) Metoclopramide

c) Procainamide

d) INH

Correct Answer - B

Ans. B. Metoclopramide

Drugs metabolized by acetylation:

- Sulfonamides (including dapson) r Procainamide
- INH
- Hydralazine
- PAS
- Clonazepam

544. Which is topical way of drug administration ?

a) Inhaled steroid

b) Transdermal patch

c) Sublingual NTG

d) Rectal diazepam

Correct Answer - A
Ans, A. Inhaled steroid
Inhaled Corticosteroids (used in asthma) have high topical activity. They act locally to reduce inflammation and hyper-reactivity of bronchial tree.
Transdermal patch, sublingual NTG and rectal diazepam are systemic routes of drug administration.

545. Neuropathy with INH therapy is least in patients?

a) Having malnutrition

b) Alcoholics

c) Fast acetylators

d) Vitamin B complex deficiency

Correct Answer - C
Ans. C. Fast acetylators
Peripheral neuropathy is more likely to occur in slowacetylators and patients with predisposing conditions such as malnutrition, alcoholism, diabetes, AIDS, and uremia.

546. True about transdermal drug delivery system are all except?

a) Applied to chest, abdomen and back

b) Drug is delivered at a constant rate

c) Good option in emergency situations

d) Fentanyl is used

Correct Answer - C

Ans, C. Good option in emergency situations

The micropore membrane in transdermal patch is such that rate of drug delivery to skin surface is less than the slowest rate of absorption from the skin.

This offsets any variation in the rate of absorption according to the properties of different sites. As such, the drug is delivered at a constant and predictable rate irrespective of site of application.

Usually chest, abdomen, upper arm, lowerback, buttock or mastoid region arc utilized.

Transdermal patches of GTN, fentanyl, nicotine and estradiol are available in India, while those of isosorbide dinitrate, hyoscine, and clonidine are marketed elsewhere.

547. Synergistic action is shown by all except ?

a) Penicillin plus sulfonamide

b) Streptomycin plus tetracycline

c) Rifampicin plus dapsone

d) Penicillin plus tetracycline

Correct Answer - D

Ans. D. Penicillin plus tetracycline

Combination of a bactericidal with a bacteriostatic drug may be synergistic or antagonistic depending on the organism.

If the organism is highly sensitive to the cidal drug - response to the combination is equal to the static drug given alone (apparent antagonism), because cidal drugs act primarily on rapidly multiplying bacteria, while the static drug retards multiPlication.

This has been seen with penicillin + tetracydine/chloramphenicol on pneumococci which are highly sensitive to penicillin.

Pneumococcal meningitis treated with penicillin + tetracycline had higher mortality than those treated with penicillin alone.

Penicillin + erythromycin for group A Streptococci and nalidixic acid + nitrofuration for E. coli have also shown antagonism.

548. Physiological antagonists are ?

a) Adrenaline and Isoprenaline

b) Histamine and adrenaline

c) Isoprenaline and propranolal

d) All of the above

Correct Answer - B
Ans. B. Histamine and adrenaline
Physiological antagonists are those that produce opposite action by acting on different receptors.
Example
Histamine causes bronchoconstriction via H1 receptors and this action is antagonized by adrenaline which causes bronchodilatation through beta 2 receptors (option d).

549. Receptor level antagonism is shown by ?

a) Adrenaline and Isoprenaline

b) Histamine and adrenaline

c) Isoprenaline and propranolol

d) All of the above

Correct Answer - C
AnS. C. Isoprenaline and propranolol
Receptor antaoonists (Pharmalogical antaqonists)
Receptor antagonists are those drugs that blocks the action of agonist by acting on same recePtors.
Example

- Isoprenaline is beta1 & beta2 receptor agonist while propranolol has antagonistic action on beta1 & beta2 recePtors (option 'c')

550. Emtricitabine is a/an ?

a) Alkylating agent

b) Antimetabolite

c) Mitotic inhibitor

d) None of the above

Correct Answer - B
Ans. B. Antimetabolite
Emtricitabine is an antimetabolite, but it is not an anticancer drug (it is an anti-retroviral drug).
All NRTIs are antimetabolites:-

- 'Although all NRTIs have same basic mechanism of action, different drugs in the class serve as antimetabolites of different purine and pyrimidine bases of DNA.

551. Fastest receptor mediated action is through ?

a) Cell membrane receptors

b) Intrinsic ion channels

c) Enzyme linked receptors

d) Intracellular receptors

Correct Answer - B
Ans. B. Intrinsic ion channels
Fastest acting receptors - Receptors with intrinsic ion channels
Slowest acting receptors – Intracellular receptors (receptors regulating gene expressions/transcription factors) à Cytoplasmic or nuclear receptors.

552. Emtricitabine is classified as?

a) Alkylating agent

b) Antimetabolite anticancer

c) NRTI

d) None of the above

Correct Answer - C
Ans. C. NRTI
Emtricitabine is an anti-retroviral drug.
It is a nucleoside-reverse transcriptase inhibitor (NRTI).
It is a synthetic cytidine analogue.
Major side effects are lactic acidosis and liver dysfunction.

553. Which among the following is present only in iv [intravenous] form -

a) Vancomycin

b) Meropenem

c) Streptomycin

d) All **of** the above

Correct Answer - B
Ans. B. Meropenem
Meropenem is given intravenously.
Vancornycin is used intravenously for all infections, except for pseudomembranous colitis, where it is used by oral route.
Streptomycin is administered by intramuscular route.

554. Side effects of clonidine are all except ?

a) Xerostomia

b) Sedation

c) Impotency

d) Diarrhea

Correct Answer - D
Ans,. D. Diarrhea
Adverse effects of clonidine are
(i) dryness of mouth (xerostomia), nose' eye, (ii) sedation, (iii) mental depression' (iv) constipation and (v) impotency.
It has no effect on lipid profile.

555. Lipid insoluble (3-blokcer is -

a) Timolol

b) Carvedilol

c) Pindolol

d) Celiprolol

Correct Answer - D
Ans. D. Celiprolol
Lipid insoluble beta blocker:

- Acebutolol
- Atenolol
- Bisoprolol
- Betoxalol
- Carteolol
- Celiprolol
- Esmolol
- Nodalol
- Sotalol
- Labetalol

556. Nonselective a + 1 blocker is ?

a) Carvedilol

b) Timolol

c) Pindolol

d) Acebutolol

Correct Answer - A
Ans. A. Carvedilol
Combined alpha & beta blockers:

- Carvedilol
- Labetalol
- Bucindolol
- Bevantolol
- Nipradilol
- Dilevalol
- Medroxalol

557. Quinine acts on which stage of plasmodium life cycle?

a) Exoerythrocytic

b) Pre-erythrocytic

c) Erythrocytic

d) All of the above

Correct Answer - C
Ans. C. Erythrocytic
Anti-malarial drugs acting on Erythrocyticschizogony.

- Fast acting ===Chloroquine, amadioquine, quininamefloquine, halofantrine, lumefanterine, atovaquone, artimisinin.
- Slow acting === Pyrimethamine, proguanil, sulfonamides,tetracyclines.

558. Non-selective Beta-blocker with sympathomimetic activity ?

a) Pindolol

b) Acebutalol

c) Nodalol

d) Metoprolol

Correct Answer - A

Ans. A. Pindolol

Beta-blockers with intrinsic sympatheomimetic (partial agonist) activity:

- Acebutolol
- Carteolol
- Pindolol(non-selective beta blocke).
- Bipindolol
- Oxprenolol
- Penbutolol
- Alprenolol
- Labetalol
- Celiprolol

559. Which of the following is non-selective 3rd generation Beta blocker ?

a) Betaxolol

b) Celiprolol

c) Carteolol

d) Nadolol

Correct Answer - C
Ans. C. Carteolol
Non selective third generation beta-blockers are corteolol, Carvedilol and labetalol.

560. Gametocidal antimalarial drug for all species of plasmodium ?

a) Chloroquine

b) Quinine

c) Primaquine

d) Mefloquine

Correct Answer - C
Ans. C. Primaquine
Gametocidal - Acts on gametocytes

- For all species: Primaquine, artimisinins
- For P. vivax: Chloroquine, quinine

561. Action of M, cholinergic receptors ?

a) Skeletal muscle contraction

b) Acid secretion in stomach

c) Decreased heart rate

d) Salivation and lacrimation

Correct Answer - C
Ans. C. Decreased heart rate
Effect of cholinergic system on heart (e.g. decreased heart rate) is through M2 receptors.

562. Levamisol is a/an ?

a) Immunomodulator

b) Immunostimulant

c) Antiheliminthic

d) All of the above

Correct Answer - D
Ans. D. All of the above
Levamisol is an anti-helminthic drug with immune-modulatory action. At low doses it has immune-stimulatory action.

563. . Beta-blocker should be used with caution in patient of -

a) Hypertension

b) Glaucoma

c) Conduction defect

d) CHF

Correct Answer - C
Ans. C. Conduction defect
Partial and complete heart block
Beta 1 receptors increase conduction in AV node.
Beta blockers decrease conduction by reducing sympathetic drive on beta 1 receptors - Worsening of block.

564. Which of the following is not excreted in kidney ?

a) Ciprofloxacin

b) Ofloxacin

c) Levofloxacin

d) Moxifloxacin

Correct Answer - D

Ans. D. Moxifloxacin

Fluroquinolone that are primarily excreted by renal mechanisms and for which dose adjustment is needed include:

- Ciprofloxacin
- Gatifloxacin
- Cinafloxacin
- Levofloxacilin
- Lomefloxacilin
- Norfloxacin
- Ofloxacin

565. Antimuscarinic drug used in overactive bladder -

a) Pirenzepine

b) Trospium

c) Tropicamide

d) Atropine

Correct Answer - B
Ans. B. Trospium
Drugs used for overactive bladder:

- Darifenacin, Solefenacin, Tolterodine, Trospium chloride, Oxybutynin, Solifenacin, Flavoxate

566. Thymidine is responsible for resistance to which antibiotic ?

a) Erythromycin

b) Sulfonamide

c) Tetracycline

d) Nitroforantoin

Correct Answer - B
Ans. B. Sulfonamide
The sulfonamides are antimetabolites that compete with PABA, thereby preventing synthesis of folic acid.
This inhibition blocks the formation of thymidine, some purines, methionine and glycine.
The enterococci are able to use exogenous thymidine and are therefore intrinsically resistant to the sulfonamides.

567. Anti-cholinesterase with central action ?

a) Neostigmine

b) Physostigmine

c) Pyridostigmine

d) Edrophonium

Correct Answer - B
Ans. B. Physostigmine
Lipid soluble agents (organophosphates and physostigmine) have more marked muscarinic and CNS effect; and stimulate ganglia but action on skeletal muscle is less prominent.

568. Antitubercular drug which makes the patient non-infective earliest ?

a) INH

b) Rifampin

c) Ethambutol

d) Pyrazinamide

Correct Answer - A

Ans. A. INH

In those with open or infectious pulmonary TB, the great majority of bacilli is freely replicating in the cavity walls and is rapidly killed by INH, thereby speedily rendering the patient non-infections.

569. Contraindication of antimuscarinic drug ?

a) Glaucoma

b) Asthma

c) Peptic ulcer

d) Urinary incontinence

Correct Answer - A
Ans. A. Glaucoma
Antimuscarinic (e.g.-atropine) drugs are contraindicated in:
1. Glaucoma
2. Benign prostatic hyperplasia

570. Maximum cycloplegic action of atropine is seen at ?

a) 30-40 minutes

b) 1-3 hours

c) 8-10 hours

d) 1-2 weeks

Correct Answer - B
Ans. B. 1-3 hours
Atropine is a powerful cycloplegic and mydriatic agent.
Most potent cycloplegic available for optometrists.
Maximum mydriasis is reached typically in 30-40 minutes while recovery may take a week or more.
Cycloplegia commences after 30 minutes of application, with marked cycloplegia being reached in 1-3 hours.
The effect may last up to 6-12 days before normal accommodation is restored.

571. One of the following is not a side effect of atropine?

a) Blurring of vision

b) Diarrhoea

c) Urinary retention

d) Confusion of elderly

Correct Answer - B

Ans. B. Diarrhoea

Side effects and toxicity of atropine

- Dry mouth
- Fever
- Difficulty in swallowing
- Constipation
- Dry, flushed hot skin
- Difficulty in micturition
- Palpitation
- Delirium
- Dilated pupil
- Photophobia
- Blurred vision
- Respiratory depression
- Cardiovascular collapse
- Psychotic behavior
- Convulsion and coma

572. Specific feature of simvastatin ?

a) Most potent statin

b) Longest acting statin

c) Lipophilic

d) Not metabolized

Correct Answer - C
Ans. C. Lipophilic
Statins are the most powerful LDL lowering drugs.
Statins are the most effective and best tolerated hypolipidemic drugs.
Simvastatin and lovastatin are lipophilic and hence, their CNS penetration is more than hydrophilic agents like pravastatin and fluvastatin.

573. Longest acting anti-cholinesterase -

a) Pyridostigmine

b) Ambenonium

c) Edrophonium

d) Echothiophate

Correct Answer - D

Ans. D. Echothiophate

There are two basic categories of cholinesterase inhibitors:

1. Reversible inhibitors
2. Irreversible inhibitors

- The reversible inhibitors produce effects of moderate duration, and the irreversible inhibitors produce effects of long duration.
- Echothiophate is irreversible inhibitor à long acting.

574. Ximelagatran is used as ?

a) Antiplatelet

b) Anticoagulant

c) Fibrinolytic

d) Antifibrinolytic

Correct Answer - B

Ans. B. Anticoagulant

Direct Thrombin Inhibitors:

- This group includes hirudin, lepirudin, bivalirudin, argatroban, dabigatran, melagatran, and ximelagatran.
- Dabigatran and Ximelagatran (a prodrug of melagatran) can be given orally.
- All other drugs are used parenterally.
- These drugs directly inactivate factor IIa (thrombin).
- These are the anticoagulant of choice for heparin-induced thrombocytopenia

575. Propranolol is used in ?

a) Thyrotoxicosis

b) AV block

c) Cardiac arrest

d) All of the above

Correct Answer - A
Ans. A. Thyrotoxicosis
Uses of beta-blockers:

- Hypertension.
- Cardiac tachyarrhythmias
- Myocardial infarction
- Classical angina pectoris
- CHF
- Dissecting aneurism
- HOCM
- Glaucoma
- Thyrotoxicosis
- Pheochromocytoma
- CNS uses - Anxiety, essential tremor, migraine prophylaxis, alcohol withdrawal.
- Emergency management of symptoms of TOF.
- Prophylaxis of bleeding in portal hypertension.

576. Atropine plus diphenoxylate combination is used for?

a) Glaucoma

b) Iridocyclitis

c) Diarrhea

d) Motion sickness

Correct Answer - C
Ans. C. Diarrhea
Diphenoxylate (2.5 mg) plus atropin (0.025 mg) combination is used as antimotility drug for treatment of diarrhea.

577. Maximum potassium loss is caused by which diuretics ?

a) Furosemide

b) Thiazide

c) Acetazolamide

d) Spironolactone

Correct Answer - C
Ans. C. Acetazolamide
For the same degree of natriuresis CAse inhibitors causes most marked kaliuresis compared to other diuretics.

578. . Hyoscine is antagonist at which cholinergic receptor?

a) Muscarinic

b) Nicotinic

c) Both

d) None

Correct Answer - A
Ans. A. Muscarinic
Hyoscine (Scopolamine) acts by competitive antagonism of acetylcholine at muscarinic receptors (Non-selective receptors).
It has little effect at nicotinic receptors.

579. Fenoldopam is used in the management of ?

a) Hypertensive emergencies

b) Congestive heart failure

c) Migraine prophylaxis

d) Tachyarrhythmias

Correct Answer - A

Ans. A. Hypertensive emergencies

Fenoldopam

- It is peripheral, arteriolar dilator used in hypertensive emergencies and post-operative hypertension.
- It acts as an agonist of dopamine D_1 receptors, resulting in dilatation of peripheral arteries and natriuresis.
- Fenoldopam increases intraocular pressure > should be avoided in patients with glaucoma.

580. Drug of choice for drug induced peptic ulcer ?

a) Prostaglandin analogues

b) H_2-receptor antagonists

c) Proton pump inhibitors

d) Antacids

Correct Answer - C
Ans. C,. Proton pump inhibitors
Drug of choice for NSAIDs induced peptic ulcer > PPIs
Most specific drug for NSAIDs induced peptic ulcer > Prostaglandin analogue.

581. True about cardiac muscle fibers ?

a) Digitalis decreases force of contraction

b) Na+ - Ca+ exchanger requires ATP directly

c) Na+-Ca+ exchanger acts to pump Ca2+ into heart muscle cells

d) All are true

Correct Answer - C

Ans. C. Na+-Ca+ exchanger acts to pump Ca2+ into heart muscle cells

3Na+/1Ca+2 exchanger

- This pump transports Ca+2 in exchange of Na+.
- When Na+ concentration inside the myocyte is high, Na+/Ca+2 exchanger cause efflux of Na+ out of the myocytes and in exchange it causes influx of Ca+2 inside the myocytes.
- Na+/Ca+2 exchanger does not require ATP to function, ions move along their concentration gradient.

582. Side effects of amiodarone are all except ?

a) Hyperthyroidism

b) Peripheral neuropathy

c) Skin discoloration

d) Hyperglycemia

Correct Answer - D

Ans. D. Hyperglycemia

Adverse effects of Amiodarone

- Thyroid dysfunction (Hypothyroidism or hyperthyroidism)
- Bluish discoloration of exposed skin.
- Peripheral neuropathy
- Myocardial depression
- Pulmonary fibrosis
- Corneal microdeposits
- Photosensitivity
- Hepatitis
- Thrombocytopenia (Major specific side effect).

583. Which among the following is renin antagonist?

a) Losartan

b) Benazepril

c) Remikiren

d) Imidapril

Correct Answer - C

Ans. C. Remikiren

- Renin inhibitors: Aliskiren, remikiren, enalkiren.
- Aliskiren, remikiren, and enalkiren are the drugs that inhibit the enzyme renin.
- So these drugs decrease the activity of RAAS causing a fall in blood pressure.
- These drugs can be used orally for the treatment of chronic hypertension.

584. Which of following is a stool softener ?

a) Bran

b) Senna

c) Phenalphthalein

d) Docusates

Correct Answer - D
Ans. D. Docusates
Stool softener (Docusates, liquid paraffin)

- They soften the stools by net water accumulation in the lumen by an action on the intestinal mucosa.
- They emulsify the colonic contents and increase penetration of water into feces.

585. Rebound increase in gastric acid secretion after stopping proton pump inhibitor therapy is due to?

a) Parietal cell hyperplasia

b) Increased histamine release

c) Hypergastrinemia

d) Hypersensitivity of Ach receptors

Correct Answer - C

Ans. C. Hypergastrinemia

Rebound acid hyper secretion (RAH) results in gastric acid secretion above pretreatment levels after acid suppression.

PPI therapy leads to diminished acid secretion and antral D-cell releases of somatostatin, while increasing G-cell release of circulating gastrin.

The increased gastrin concentration exerts a trophic effect on oxyntic mucosa, causing hyperplasia and increased functional capacity of the enterochromafin - like (ECL) cell and parietal cell.

Increased acid secretion due to sustained hypergastrinemia is not apparent during PPI therapy but appears with drug cessation theoretically, leading to acid- related heartburn, acid regurgitation or dyspepsia,

586. Which of the following is a PAR antagonist ?

a) Prasugrel

b) Ticlopidine

c) Tirofiban

d) Vorapaxar

Correct Answer - D
Ans. D. Vorapaxar
PARs are activated after thrombin-mediated proteolytic cleavage of their N-terminal exodomain.
Platelet activation by thrombin is mediated via two PARs: PAR-I and PAR-4. PAR-I is the major human platelet receptor, exhibiting 10-100 times higher affinity for thrombin when compared with PAR-4.
Two selective PAR-I antagonists are under clinical evaluation: Vorapaxar (SCH530348) and Atopaxar (E5555).

587. Mechanism of action of ticgrelor ?

a) Reversible inhibition of ADP action

b) Irreversible inhibition of ADP action

c) Reversible inhibition of **GPIIb/IIIa**

d) Irreversible inhibition of GPIIb/IIIa

Correct Answer - A
Ans. A. Reversible inhibition of ADP action
Cangrelor andticagrelot are reversible antagonist ofADP (P2 Y12), in contrast to ticlopidine, which is irreversible antagonist.

588. Antihypertensive drug causing erectile dysfunction?

a) Calcium channel blocker

b) ACE inhibitors

c) AT 1 receptor antagonists

d) 13-blockers

Correct Answer - D
Ans. D. 13-blockers
Important drugs causing erectile dysfunction

- Beta-blockers
- Diuretics (especially thiazide)
- Lithium
- Clonidine
- OCPs
- TCAs & SSRIs
- Sedatives/hypnotics

589. Thiazides cause hypercalcemia by ?

a) Increased Ca" absorption

b) Increased PTH secretion

c) Decreased calcitonin secretion

d) Decreased calcium excretion

Correct Answer - D

Ans. D. Decreased calcium excretion

Thiazides cause hypercalcemia by:-

- Reduced urinary excretion of calcium due to a direct tubular effect or ECF depletion with secondary increase in tubular reabsorption of sodium and calcium, or both.
- Increased bone responsiveness to the resorptive action of vitamin D and PTH.

590. Drug affecting positive free water clearance without affecting negative free water clearance -

a) Loop diuretics

b) Thiazides

c) Acetazolamide

d) Amiloride

Correct Answer - B

Ans. b. Thiazides

Loop diuretics abolishes the cortico-medullary osmotic gradient and blocks positive as well as negative free water clearance.

Thiazides decrease positive free water clearance without affecting negative free water clearance.

591. Mechanism of action of ticagrelor ?

a) Cox inhibition

b) GPIIB/IIIAinhibition

c) Inhibition of thromboxane synthase

d) P_2Y_{12} receptor antagonist

Correct Answer - D

Ans, D. P_2Y_{12} receptor antagonist

Ticlopidine, clopidogrel, Prasugrelàthey block ADP mediated platelet activation by irreversible antagonism of P_2 Y_{12} receptor on ADP.

592. Which of the following adverse effect of ACE inhibitors is not due to bradykinin ?

a) Cough

b) Angiodema

c) Hypotension

d) None of the above

Correct Answer - C
Ans. C. Hypotension
Bradykinin and sustance P are substrate for ACE.
ACE inhibitors increase level of these kinins by inhibiting ACE, which is responsible for cough and angiodema.
Cough and angioedema are due to elevated bradykinin, caused by inhibition of bradykinin/srbstance P metabolism in lungs.

593. Which ACE inhibitor in safe in renal failure ?

a) Captopril

b) Enalapril

c) Benazapril

d) None

Correct Answer - C
Ans. C. Benazapril
Benazapril conferrred substantial renal benefits in patients without diabetes who had advanced renal insuficiency".
Benazapril is considered safe in renal failure.

594. True about heparin induced thrombocytopenia ?

a) Low molecular weight heparin is better alternative

b) Antibodies are formed against platelets

c) Vitamin K is specific antidote

d) Within 12 hours of starting heparin

Correct Answer - B

Ans. B. Antibodies are formed against platelets

Heparin induced thrombocytopenia (HIT)

- HeParin induced thrombocytopenia is an important adverse effect ofheparin administration, usuallycausedbyunfractionated heparin, but may also be seen with the use of low molecular weight heparin (LMWH).

HIT may be of two types :

1. Type I (Non-immune mediated) :- It is mild and heparin maybe continued.
2. Type 2 (Immune mediated) :- It is due to formation of antibodies against platelets. Paradorical thrombosis can occur.

- Heparin must be discontinued immediately.
- Warfarin and LMW are contraindicated.
- Lepirudin (a direct thrombin inhibitor) is anticoagulant ofchoice.
- Alternatives are danaparoid,hiruitin and Argaboban.

595. Sympathomimetic drug which causes decrease in heart rate ?

a) Adrenaline

b) Isoprenaline

c) Noradrenaline

d) None

Correct Answer - C
Ans. C. Noradrenaline

596. True about oral iron preparations ?

a) Most commonly used preparation is ferrous gluconate

b) Ferrous fumarate is most efficient

c) Different preparations have different biovailability

d) Ferric preparations are more effective

Correct Answer - C

Ans. C. Different preparations have different biovailability

Preferred route for iron supplementation is oral.

Ferrous salts are inexpensive, have good iron content and are better absorbed than ferric salts.

Most commonly used preparation isferrous sulfute, which is the cheapest and as effective a source of elemental iron as more expensive preparations.

It contains 32% iron in dried salt and 20% iron in hydrated salt.

Other effective and inexpensive preparations are ferrous gluconate (12% lron) and ferrousfumarate (33% iron), which are equivalent to ferrous sulfate.

597. Na*- K*- 2Cl- is inhibited by -

a) Thiazides

b) Acetazolomide

c) Furosemide

d) Amiloride

Correct Answer - C
Ans. C. Furosemide
High efficacy (high ceiling or loop diuretics - inhibitors of Na+ - K+-2Cl-)

- Furosemide
- Bumetanide
- Torasemide
- Ethacrynic acid

598. Atypical side effect montelukast ?

a) Good pasture syndrome

b) Churg - Strauss syndrome

c) Membranous glomerulonephritis

d) Bronchial asthma

Correct Answer - B
Ans. B. Churg - Strauss syndrome
Churg-Strauss syndrome can be ceused by leukotriene antagonists (e.g, Monteleukast).

599. Acetaminophen [Paracetamol] induced liver toxicity is due to ?

a) N-acetyl cystine

b) NAPQ

c) Co-Q

d) Cytochrome 'C'

Correct Answer - B
Ans. B. NAPQ
Paracetamol is metabolized to N-acetyl-paraaminobenzoquinoneimine (NAPQ) by microsomal enzymes. This metabolite has high affinity for sulf-hydryl groups and can combine with the enzymes andotherbiomolecules resulting in hepatotoxicity.
N-acetyl Cystine is used as an antidote.
It replenishs the glutathione stores of liver and prevents binding of the toxic metabolite to other cellular constituents.

600. Triptan taken by nasal route is ?

a) Sumatriptan

b) Rizatriptan

c) Naratriptan

d) Frovatriptan

Correct Answer - A
Ans. A. Sumatriptan
Sumatriptan can also be taken as:
1. Nasalspray
2. Suppository
3. Subcutaneous injection

- Besidesumatriptan,Zolmitriptan can also be used by nasal route.

601. Long acting 13-2 agonist is ?

a) Formoterol

b) Isoprenaline

c) Salbutamol

d) Ephedrine

Correct Answer - A
Ans. A. Formoterol
Beta-2 agonists:

- Used in asthma.
- Long acting - Salmeterol, formoterol.
- Short acting - Salbutamol, terbutaline.

602. PGE1 analogue is ?

a) Carboprost

b) **Alprostadil**

c) Epoprostenol

d) Dinoprostone

Correct Answer - B
Ans. B. Alprostadil

- PGI2 analogue - Epoprostenol,treprostinil.
- PGE1 analogue - Alprostadil, Misoprostol
- PGE2 analogue - Dinoprostone.
- PGF2(alpha) analogue - Carboprost, latanoprost, bimatoprost, travoprost.

603. Oral sore due to inhaled steroids are treated by ?

a) Griseofulfin

b) Amphotericin-B

c) Fusidic acid

d) Muprocin ointment

Correct Answer - B
Ans. B. Amphotericin-B
One of the common side effect of inhaled corticosteroids is oro-pharyngeal candidiasis, which can be treated by,
Topical antifungal (nystatin, clotrimazole, amphoterian B oral suspension).
Systemic oral azoles (fluconazole, itraconazole, posaconazole).

604. Which of the following antidiabetic drug is insulin secretogogue ?

a) Pramlintide

b) Glucomannan

c) Exenatide

d) None

Correct Answer - C
Ans. C. Exenatide
Among parentralantidiabetic(hypoglycemic) drugs - Enenatide is insulin secretagogue, i.e. stimulate insuline release.

605. Which of the following oral antidiabetic drug is insulin secretagogues?

a) Metformin

b) Pioglitazone

c) Nateglinide

d) Acarbose

Correct Answer - C

Ans. C. Nateglinide

- Nateglinide is an oral antidiabetic drug that causes the release of insulin (insulin secretagogue).
- It is a D-phenylalanine derivative which principally stimulates the 1st phase insulin secretion.
- It is used in type 2 diabetes mellitus along with other antidiabetics, to control the prandial rise in blood glucose

606. Which antithyroid drug crosses placenta ?

a) Carbimazole

b) Propylthiouracil

c) Both

d) None

Correct Answer - C
Ans. C. Both
Both propylthiouracil and methimazole/carbimazole cross placenta. But because of high protein binding capacity of propylthouracil is transferred less across Placenta).
Therefore, it is preferred in pregnancy.

607. Beta blockers used in thyroid storm cause ?

a) Quick relief of symptoms

b) Increased metabolism of thyroxine

c) Blockade of thyroxine receptors

d) Decreased synthesis of thyroxine

Correct Answer - A

Ans. A. Quick relief of symptoms

Non-selective beta-blocker:

- Most valuable measure in thyroid storm.
- In thyroid storm most of the symptoms are because of adrenergic overactivity due to increased tissue sensitivity to catecholamines in hyperthyroidism.
- This increased sensitivity is due to increased number of p-receptors. So, quick relief can be obtained by blocking receptors.

608. Which of the following is true?

a) Glucocorticoids upregulate MHC expression

b) Glucocorticoids activate T-helper cells

c) Glucocorticoids activate cytotoxic T cells

d) None of the above

Correct Answer - A
Ans. A. Glucocorticoids upregulate MHC expression
Glucocorticoids both inhibit as well as upregulate MHC expression depending upon cells and species involved.
Dexamethasone increases MHC class 2 expression on human endothelial cells and monocytes whereas it down regulates it on B-cells.
Glucocorticoids have inhibitory effect on both T-Helper cells and cytotoxic T cells.

609. For activity of antipsychotic, action is required at which receptor -

a) M, muscarinic

b) D1dopaminergic

c) $D_Z$dopaminergic

d) 5HT4 serotonergic

Correct Answer - C

Ans. C. $D_Z$dopaminergic

Typical antipsychotic acts by blocking D2 receptors (D2 antagonists).

610. Mechanism of action of opioids ?

a) Inhibition of cyclooxylgenase

b) Inhibition of opioid receptors at spinal level

c) Inhibition of opioid receptors at supraspinal level

d) Inhibition of opioid receptors at spinal and supraspinal level

Correct Answer - D

Ans. D. Inhibition of opioid receptors at spinal and supraspinal level

Opioids have both spinal & supra-spinal components for their analgesic effects.

611. Zonisamide acts on ?

a) GABA receptors

b) T type Ca^{2+} channels

c) Na^{+}Channels

d) Cl^{-} channels

Correct Answer - C

Ans. C. Na^{+}Channels

Anti-epileptics causing prolongation of Na2+ channel inactivation:

- Phenytoin
- Carbamazepine
- Valproate
- Lamotrigine
- Topiramate
- Zonisamide

612. Opioid [morphine] causes ?

a) Increased heart rate

b) Increased muscle tone

c) Mydriaris

d) Respiratory stimulation

Correct Answer - B
Ans. B. Increased muscle tone
Morphine causes both stimulant and depressive effects.
On CNS stimulation (Cortical area and hippocampus) morphine causes muscular rigidity & convulsions.

613. Beside depression, other use of SSRIs ?

a) Erectile dysfunction

b) Retrograde ejaculation

c) Premature ejaculation

d) Sterility

Correct Answer - A:C

Ans. A. Erectile dysfunction & C. Premature ejaculation

- SSRIs are effectively used in premature ejaculation.
- SSRIs can cause prolongation of preorgasmic plateau and thus delay ejaculation.
- SSRIs can also be used in erectile dysfunction secondary to depression.

Other uses of SSRIs:

- Depression (most common use)
- OCD
- Panic disorder
- Social phobia
- PTSD
- Generalized anxiety disorders
- Pre-menstural dysphoric disorders

614. Which of the following drugs act directly without sexual stimulation ?

a) Sildenafil

b) Tadalafil

c) Alprostadil

d) Testosterone

Correct Answer - C
Ans. C. Alprostadil
Alprastadil (pGEl) is directly injected into corpora cavernusa for erectile dysfunction'
It acts by increasing arterial inflow'' by vasodilation and reducing outflow by contracting the carporal smooth muscle that occludes draining venules.

615.

Healthy Human volunteers part of which clinical trial phase?

a) Phase 1

b) Phase 0

c) Phase 3

d) Phase 4

Correct Answer - A
Ans: A, Phase 1.
Phase I of clinical trial is human pharmacology and safety.
Phase I involves normal human volunteers.

616. DOC for scorpion sting bite is?

a) EDTA

b) Neostigmine

c) N-acetylcysteine

d) Prazosin

Correct Answer - D

Ans: d. Prazosin

DOC for poisoning due to sting of scorpion – Prazosin.

Prazosin:

- An alpha-blocker.

Management of scorpion sting bite:

Depending upon the severity of Scorpion poisoning:

- Immunotherapy - (dose depending on antivenom titer)
- Prazosin
- Midazolam
- Aspirin

617. Site of action of amphotericin B is:

a) Ribosomes

b) Cell wall

c) Plasma membrane

d) Protein

Correct Answer - B

Answer:- B - Cell wall

Polyene drug compounds like Amphotericin B acts on cell membrane -

- Amphotericin B, antifungal agent.
- Chemically a polyene compound
- Obtained from Streptomyces nodosus.
- Polyenes have a high affinity for “ergosterol” present in the fungal cell membrane.
- Binds and gets inserted into the cell membrane forming “Micropore”.
- Marked increase in permeability of cell membrane.
- Polyene drug compounds like Amphotericin B acts on cell membrane
- Amphotericin B, antifungal agent.
- Chemically a polyene compound
- Obtained from Streptomyces nodosus.
- Polyenes have a high affinity for “ergosterol” present in the fungal cell membrane.
- Binds and gets inserted into the cell membrane forming “Micropore”.
- Marked increase in permeability of cell membrane.

618. Which antiretroviral drug also has anti hepatitis activity?

a) Abacavir

b) Tenofovir

c) Nevirapine

d) Emtricitabine

Correct Answer - D
Answer: **D - Emtricitabine**
Emtricitabine, NRTI drug with both antiretroviral & anti-hepatitis properties

- Nucleoside reverse transcriptase inhibitor for the prevention and treatment of HIV infection in adults and children.
- Also used in combination with tenofovir

619. Drug of choice for resistant rheumatic chorea?

a) Valproate

b) Haloperidol

c) Diazepam

d) Probenecid

Correct Answer - A

Answer: - A - Valproate

- **Valproate,** Sulpiride, & diazepam are used for symptomatic treatment.

Acute Rheumatic Fever:

- Abnormal immune response to group A streptococcal infection
- Commonly affecting the joints, heart, brain, and skin.
- **Symptoms:** Arthritis, related to carditis &**chorea**.

Sydenham's chorea / Chorea minor

- Characterized by rapid, uncoordinated jerking movements primarily affecting the face, hands and feet.
- Signs & symptoms of chorea usually do not respond well to treatment with antirheumatic agents
- **Symptomatic treatment include anticonvulsants (eg, valproate, carbamazepine**) and neuroleptics (eg, pimozide, haloperidol, risperidone, olanzapine

620. At pKa=pH -

a) Conc. of drug is 50% ionic and 50 % non-ionic

b) Absorption of drug is 50% ionic and 50% ionic

c) Conc of drug is 75% ionic and 25 % non-ionic

d) Conc of drug is 25% ionic and 75 % non-ionic

Correct Answer - A

Answer: A - Concentration of drug is 50% ionic & 50 % Non-ionic

Numerically equal pKa & pH represents 50% drug ionization

- pKa is negative logarithm of acidic dissociation of weak electrolyte.
- **On equal concentrations of ionized & unionized drugs, log 1 is zero.**
- Thus, when pKa is numerically equal to pH
- **(pKa=pH)→ 50 % drug is ionized.**

621. Physiological dose of hydrocortisone (mg/kg/day) is -

a) 5 mg/kg/day

b) 10 mg/kg/day

c) 15 mg/kg/day

d) 20 mg/kg/day

Correct Answer - B
Answer:- **B - 10 mg/kg/day**
The normal rate of secretion of two principle corticoids
Hydrocortisone - 10 mg/kg/day (nearly half in morning hours)
Aldosterone - 0.125 mg/daily

622. What is mechanism of action of colchicine in acute gout?

a) Inhibition of purine metabolism

b) Inhibition of uric acid conversion

c) Migration of leukocytes

d) Leukocytes, lymphocytes inhibition & microtubular inhibitor

Correct Answer - D

Answer: D - Leukocytes, Lymphocytes migration inhibition & microtubular inhibitor.

Colchicine acts by inhibiting the granulocyte migration into the inflamed joint.

- An alkaloid from Colchium autumnale
- **Specifically suppresses gouty inflammation.**
- Doesn’t inhibit the synthesis or promote the excretion of uric acid.

Mechanism of action:

- **Colchicine acts by, inhibits the release of glycoprotein**
- **Binds to fibrillar protein tubules inhibiting granulocyte migration into the inflamed joint**.
- An acute attack of gout starts by precipitation of urate crystals in synovial fluid.
- Inflammatory response starts with granulocyte migration into joint
- Phagocytosing urate crystals releasing glycoprotein
- Glycoprotein increases lactic acid production and releasing lysosomal enzymes causing more joint destruction.

623. Basiliximab is an -

a) IL-1 receptor antagonist

b) Anti-CD3 antibody

c) IL-2 receptor antagonist

d) TNF inhibitor

Correct Answer - C
Answer:- C - IL-2 receptor antagonist
Basiliximab exhibits high affinity towards IL-2 receptor, inhibiting it.

- Anti- CD-25 antibody
- **High affinity for IL-2 receptor**
- Short plasma half life - 1 week
- Useful in preventing transplant rejection reactions.
- Adverse effects - Anaphylactic reactions & opportunistic infections.

624. Pirenzapine is used -

a) Gastric ulcer

b) Glaucoma

c) Hypertension

d) Congestive cardiac failure

Correct Answer - A
Answer: A - Gastric Ulcer
Pirenzepine, a selective M1 anticholinergic drug inhibiting gastric acid secretion.

- Low therapeutic dose range.
- **Used for treating gastric ulcer.**

625. Which of the following antipsychotic have increased prolactin secretion -

a) Olanzapine

b) Ziprasidone

c) Clozapine

d) Risperidone

Correct Answer - D

Answer:- D - Risperidone

Significant rise in prolactin levels during risperidone therapy is observed.

- **Risperidone -** Antipsychotic drug with combined 5-HT 2a and dopamine D2 antagonist activity
- High affinity to alpha1, alpha 2 and H1 receptors
- More potent D2 blocker than clozapine
- Ameliorates symptoms of schizophrenia
- **Prolactin levels rise during risperidone therapy, but less epileptogenic than clozapine.**
- Produces extrapyramidal side effects are less only at lower doses (<6 mg/day).
- Blockade of these contribute to efficacy and side effects like postural hypotension.
- Frequently causes agitation.

626. Which of the following is glucocorticoid synthesis inhibitor?

a) Mifepristone

b) Flutamide

c) Finasteride

d) Metyrapone

Correct Answer - D
Answer: D - Metyrapone
Inhibits 1113- Hydroxylase in adrenal cortex
Prevents the synthesis of hydrocortisone

627. Which of the following statements is incorrect w.r.t Prasugrel?

a) Not a prodrug

b) P2Y purinergic receptor blocker

c) Has a strong antiplatelet activity

d) Causes intracranial hemorrhage in TIA patients.

Correct Answer - A
Answer: A - Not a prodrug
Prasugrel is a prodrug , similar to Clopidogrel
Thienopyridine drug class
Irreversible antagonist of $P2Y_{12}$ ADP receptors
Rapidly absorbed, completely activated & exerts more consistent platelet inhibition.
Strong anti-platelet activity
Bleeding complications are more serious and frequent.
Contraindicated in patients with history of ischemic strokes and TIA's

628. Q-T elongation is seen in which drug?

a) Quinidine

b) Amiodarone

c) Magnesium Sulfate

d) Lignocaine

Correct Answer - A

Answer: A - Quinidine

Specific pattern of Q-T prolongation is referred to as “Torsades de pointes”

Drugs causing Torsades de Pointes

- **Quinidine (most common)**
- Sotalol
- Procainamide
- Disopyramide
- Phenothiazines
- Tricyclic antidepressants

629. Sacubitril is,

a) ACE inhibitor

b) Neutral endopeptidase inhibitor

c) Calcium channel inhibitor

d) Beta adrenergic blocker

Correct Answer - B
Answer: B - Neuro-endopeptidase inhibitor
Sacubitril**,a prodrug inhibiting neuro-endopeptidase enzyme**
Activated to Sacubitril,
Inhibiting enzyme neprilysin (Neutral endopeptidases)
Combination drug used in heart failure patients
Usually combined with ACE inhibitors like valsartan in ratio of 1:1

630. Niacin therapy is contraindicated in diabetes because -

a) Increases the blood sugar levels

b) Causes scleroderma

c) Difficult to give injection

d) Increases the metabolism of oral hypoglycemic drugs

Correct Answer - A
Answer: A - increases the blood sugar levels
Niacin therapy has potential effects on blood sugar levels.
Increases the blood glucose levels in diabetes patients

631. Endothelin acts through which receptors?

a) cAMP

b) cGMP

c) Na+ receptors

d) Calcium receptos

Correct Answer - A
Answer: A - cGMP
Endothelin-1 (ET-1) is a potent endogenous vasoconstrictor, mainly secreted by endothelial cells.

632. Which is the centrally acting alpha 2 agonist muscle relaxant -

a) Diazepam

b) Bromocriptine

c) Tizanidine

d) Methocarbamol

Correct Answer - C
Answer: -C- Tizanidine
Central alpha 2 adrenergic agonist
Mechanism of action:

- Inhibits the release of excitatory amino acids in spinal interneurons
- Facilitates the inhibitory transmitter glycine
- Inhibits postsynaptic reflexes
- Reducing muscle tone, frequency of muscle spasms.without reducing the strength of muscle.

Indications:

- Spasticity in neurological disorders
- Painful muscle spasm of spinal origin.

Contraindications:

- Patients on antihypertensives specially clonidine.

633. Apixaban is -

a) Antithrombin inhibitor

b) Direct Xa inhibitor

c) Platelet activator

d) Clotting Factor XII

Correct Answer - B
Answer: B - Direct Xa inhibitor
Direct Xa inhibitor

- Anticoagulant for treatment & prophylaxis of venous thromboembolic events
- DVT & PE

634. Anaerobes are resistant intrinsically against -

a) Beta lactam antibiotics

b) Aminoglycosides

c) Azithromycin

d) Metronidazole

Correct Answer - B
Answer: B - Aminoglycosides
Anaerobic bacteria particularly are resistant to aminoglycosides due to lack of oxidative mechanism to drive drug uptaking process.
Intrinsic resistance / Insensitivity:

- Innate ability of bacteria to resist activity of particular antimicrobial agent
- Inherent structural or functional characteristics allows for tolerance of a particular drug or antimicrobial class. i.e., Susceptibility to that particular drug is reduced.

635. Which is not bacteriostatic antibiotic -

a) Clindamycin

b) Vancomycin

c) Tetracycline

d) Cephalosporins

Correct Answer - B
Answer: B- Vancomycin
Bacteriostatic antibiotics

- **Limit bacterial growth by interfering with bacterial protein production, DNA replication,** or other aspects of bacterial cellular metabolism.
- Tetracyclines, sulfonamides, clindamycin, spectinomycin,trimethoprim, chloramphenicol, macrolides and lincosamides.

Bactericidal antibiotics

- **Inhibit cell wall synthesis** (Irreversible killing)
- Aminoglycosides. cephalosporins. fluoroquinolones. metronidazole. penicillin. vancomycin

636. Which of the following causes melanosis coli?

a) Senna

b) Sorbitol

c) Magnesium Sulphate

d) Bisacodyl

Correct Answer - A

Answer: A - Senna

Laxative abuse with drugs like senna cause melanosis coli

- **Anthranoid laxatives (aloe, cascara sagrada, and senna**) are derived from naturally occurring plants
- Considered to be **stimulant laxatives.**
- Safer short term use.
- **Long term abuse can cause melanosis coli & possibly increases risk of colonic cancer.**

637. Which among the following will the choice of antibiotic for a bedridden patient with catheter-related UTI and pneumonia.

a) Amoxicillin

b) Beta Lactam antibiotics with beta lactamase

c) 3rd gen cephalosporins

d) 2nd gen cephalosporins

Correct Answer - B
Answer: B - Beta Lactam Antibiotics
Contains beta lactamase enzyme for potent action against organisms causing UTI

638. Mycoplasma is resistant to -

a) Ceftriaxone

b) Cephalosporins

c) Aminoglycosides

d) Fluoroquinolones

Correct Answer - A
Answer: A - Ceftriaxone
Mycoplasma shows resistance towards **Ceftriaxone, a third generation cephalosporin (beta lactam antibiotic)**
Lack of cell wall in mycoplasmas makes them intrinsically resistant to β-lactams& to all antimicrobials that target cell wall.
Mycoplasma pneumoniae:

- Mycoplasma pneumoniae is a pathogenic mycoplasma responsible for respiratory tract infections in humans.
- **First -line treatment**: macrolides & related antibiotics, tetracyclines and fluoroquinolones is preferred.

639. Tadalafil should not be given with:

a) Vasodilator

b) Antibiotics

c) Vasoconstrictors

d) Valproate

Correct Answer - A
Answer: A - Vasodilators
Combination with vasodilators results in sudden changes of blood pressure values
Tadalafil relaxes muscles of the blood vessels and increases blood flow to particular areas of the body.
Used to treat erectile dysfunction (Impotence), and symptoms of benign prostatic hypertrophy (Enlarged prostate)
Eg: **Taking tadalafil with vasodilator drug like nitrate can cause sudden & serious decrease in blood pressure**.

640. Trilene is degraded by:

a) Enzymatic Degradation

b) Non Enzymatic degradation

c) Chemical Degradation

d) None

Correct Answer - A

Answer: A. Enzymatic Degradation

Trilene or trichloroethylene is a good analgesic, less depressant, and non-flammable.

Cardiac dysrhythmia, or tachypnoea may occur during administration.

It should not be used in the closed circuit as it reacts with soda-lime to produce a toxic gas(phosgene).

Recovery is slow and nausea as well as vomiting may be present.

It should not be used with adrenaline infiltration lest dysrhythmia be converted to ventricular fibrillation.

Degradation:

- Brought about by enzymatic degradation
- The enzyme that starts one branch of this pathway, toluene 1,2-dioxygenase, has many other catalytic abilities, which are documented in a table of the Reactions of Toluene 1,2-Dioxygenase.
- The spontaneous degradation of trichloroethylene epoxide can produce as many as four products: dichloroacetate, carbon monoxide, glyoxylate, and formate. The number, type, and proportion of products seen depends on the local environment.

641. Mechanism of action colchicine in acute gout

a) Uric acid nephrolithiasis

b) Deficiency of enzyme Xanthine oxidase

c) Increase in serum urate concentration

d) Renal disease involving interstitial tissues

Correct Answer - B

Ans.B.Deficiency of enzyme Xanthine oxidase.

Gout is a hereditary disorder with **increase in serum uric acid** due to increased production, or decreased excretion of uric acid and uric salt.

Thought to be caused by lack of an enzyme needed to completely metabolise purines for renal excretion.

Table 1. Metabolic Risk Factors for Gout

Obesity, eating 13w-1nel-rich foods (high levels of meat and seafood consumption)

Excessive alcohol intake

Metabolic syndrome

- Obesity
- Hypertension
- Hyperlipidernia
- Hyperglycemia

Type 2 diabetes mellitus

- Hypertension
- Hyperlipidernia

Serum urate—elevating medications

History of urolithiasis

Chronic kidney disease, glomerular, or interstitial renal disease; polycystic kidney disease

Potential genetic or acquired cause of uric acid overproduction, including malignancy

Lead, or heavy-metal intoxication

642. Which drug decreases the bone resorption in osteoporosis?

a) Teriparatide

b) Risedronate

c) Cortisone

d) Cimetidine

Correct Answer - B

Answer: B - Risedronate

Risedronate bisphosphonates inhibits bone resorption by actions on osteoclast precursors in osteoporosis patients

Risedronate:

- Aminobisphosphonate

Indications:

- Prevention & treatment of osteoporosis

Mechanism of action:

- Inhibits bone resorption by action on osteoclasts
- Reduce bone remodelling
- More potent in blocking the bone dissolution process.
- Teriparatide, an PTH analog, recombinant human PTH is also used, yet in severe cases of osteoporosis, improving the skeletal microarchitecture

643. Which of the following is true about vitamin K?

a) Anticoagulant

b) Prolong use of antimicrobial leads to deficiency

c) Dietary allowance is 15-20 mg

d) All of the above

Correct Answer - B

Ans. B. Prolong use of antimicrobial leads to deficiency

Certain people are at increased risk if they:

- take coumarin anticoagulants such as warfarin, which thins the blood
- are taking **antibiotics**
- have a condition that causes the body to not absorb fat properly (fat malabsorption)
- have a diet that is extremely lacking in vitamin K

Vitamin K is a group of structurally similar, fat-soluble vitamins the human body requires for complete synthesis of certain proteins that are prerequisites for blood coagulation and which the body also needs for controlling binding of calcium in bones and other tissues The body needs vitamin K to produce prothrombin, a protein and clotting factor that is important in blood clotting and bone metabolism.

Without vitamin K, blood coagulation is seriously impaired, and uncontrolled bleeding occurs. Preliminary clinical research indicates that deficiency of vitamin K may weaken bones, potentially leading to osteoporosis, and may promote calcification of arteries and other soft tissues

Dietary allowance for adults per day- 50-100 mg.

644. Which drugs needs continuous monitoring of prothrombin time?

a) Aspirin

b) Lepirudin

c) Digoxin

d) Coumadin

Correct Answer - D
Ans. D. Coumadin
Coumadin (warfarin) is an anticoagulant.
Warfarin is a coumarin anticoagulant used for the prophylaxis and treatment of thromboembolic complications associated with cardiac valve replacement and atrial fibrillation,as well as the prophylaxis and treatment of venous thrombosis and pulmonary embolism.Increased metabolism of warfarin results in insufficient prolongation of prothrombin time.

645. Which is not a prokinetic agent?

a) Dopamine antagonist

b) 5HT4 agonist

c) Macrolides

d) Diphenylmethane

Correct Answer - D
Ans: D. Diphenylmethane
Prokinetic drugs:

- These are drugs that promote gastrointestinal transit and speed gastric emptying by enhancing coordinated propulsive motility.
- This excludes traditional cholinomimetics and anti-ChEs which produce tonic and largely uncoordinated contraction.

Drugs included:

- Metoclopramide,
- Domperidone,
- Cisapride,
- Mosapride,
- Itopride

Ref: K. D. Tripathi 7th Edition. Page 663 - 665

646. Which of the following drugs act by inhibiting DNA replication?

a) 6 Mercaptopurine

b) Actinomycin D

c) Mitomycin C

d) Asparaginase

Correct Answer - A

Ans: A. 6 Mercaptopurine

6-Mercaptopurine acts by inhibiting DNA replication.

Antimetabolites:

- These are analogues related to the normal components of DNA or of coenzymes involved in the nucleic acid synthesis.
- They competitively inhibit the utilization of the normal substrate or get themselves incorporated forming dysfunctional macromolecules.

Includes:

- Folate antagonist - Methotrexate (Mtx)
- Purine antagonist - 6-Mercaptopurine (6-MP)
- Pyrimidine antagonist - 5-Fluorouracil (5-FU)

Purine antagonists

- Mercaptopurine (6-MP) and thioguanine (6-TG).
- These are highly effective antineoplastic drugs.
- After synthesis in the body to the corresponding mono ribonucleotides, they inhibit the conversion of inosine monophosphate to adenine and guanine nucleotides that are the building blocks for RNA and DNA.
- There is also feedback inhibition of de novo purine synthesis.
- They also get incorporated into RNA and DNA which are dysfunctional.

Ref: K. D. Tripathi 7th Edition. Page. 858, 862 – 863

647. DOC for Onychomycosis?

a) Terbinafine

b) Fluconazole

c) Nystatin

d) Itraconazole

Correct Answer - A
Ans: A. Terbinafine
Onychomycosis (a fungal infection of the nail, usually caused by a dermatophyte).
Onychomycosis is more difficult to treat than most dermatophytosis because of the inherent slow growth of the nail.
Older antifungal agents (ketoconazole and griseofulvin) are unsuitable for onychomycosis because of their relatively poor efficacy and potential adverse effects.
Three recently developed antimycotic agents (fluconazole, itraconazole, and terbinafine) offer high cure rates and good safety profiles.
Ref: ***https://www.ncbi.nlm.nih.gov/pmc/articles/PMC88888/***

648. Theophylline by what mechanism causes diuresis?

a) PDE3 inhibition

b) PDE4 inhibition

c) Beta 2 agonist action

d) Adenosine A1 receptor antagonism

Correct Answer - D

Ans: D. Adenosine A1 receptor antagonism

The mildly diuretic actions of both methylxanthines are mainly the result of inhibition of tubular fluid reabsorption along the renal proximal tubule.

Based upon the use of specific adenosine receptor antagonists and the observation of a complete loss of diuresis in mice with targeted deletion of the A1AR gene, transport inhibition by methylxanthines is mediated mainly by antagonism of adenosine A1 receptors (A1AR) in the proximal tubule.

Methylxanthines are weak renal vasodilators, and they act as competitive antagonists against adenosine-induced preglomerular vasoconstriction.

Caffeine and theophylline stimulate the secretion of renin by inhibition of adenosine receptors and removal of the general inhibitory brake function of endogenous adenosine.

Since enhanced intrarenal adenosine levels lead to reduced glomerular filtration rate in several pathological conditions theophylline has been tested for its therapeutic potential in the renal impairment following the administration of nephrotoxic substances such as radiocontrast media, cisplatin, calcineurin inhibitors or following ischemia-reperfusion injury.

Ref: https://www.ncbi.nlm.nih.gov/pubmed/20859805

649. Which of the following antimicrobials should not be given to a chronic asthmatic patient managed on theophylline therapy?

a) Erythromycin

b) Amoxicillin

c) Cefotaxime

d) Cotrimoxazole

Correct Answer - A
Ans: A. Erythromycin
Drugs which inhibit theophylline metabolism and increase its plasma level are Erythromycin, Ciprofloxacin, Cimetidine, Oral contraceptives, Allopurinol;
The dose should be reduced to 2/3.
Ref: K. D. Tripathi 7th Edition. Page. 226- 227

650. DOC of prophylaxis for motion sickness?

a) Promethazine

b) Prochlorperazine

c) Metoclopramide

d) Itopride

Correct Answer - A

Ans: A. Promethazine

Motion sickness:

- Antiemetics with the anticholinergic-antihistamine property are the first choice drugs for motion sickness.
- Antidopaminergic and anti-HT 3 drugs are less effective.
- All anti-motion sickness drugs act better when taken ½–1 hour before commencing the journey.
- Once sickness has started, it is more difficult to control; higher doses/parenteral administration may be needed.

Drugs Included:

- **Promethazine, diphenhydramine, dimenhydrinate:**
- These drugs afford protection of motion sickness for 4–6 hours.

Promethazine theoclate:

- This salt of promethazine has been specially promoted as an antiemetic, but the action does not appear to be significantly different from promethazine HCl.

651. Which of the following antihypertensive drug is avoided in patients with high serum uric acid levels?

a) Hydrochlorothiazide

b) Enalapril

c) Prazosin

d) Atenolol

Correct Answer - A
Ans: A. Hydrochlorothiazide
Long-term use of higher dose thiazides in hypertension has caused a rise in blood urate levels.
Ref: K. D. Tripathi 7th Edition. Page. 585

652. Mechanism of resistance to penicillins via beta-lactamase is

a) Altered penicillin-binding proteins

b) Drug efflux

c) Breaks drug structure

d) Alteration in 50S ribosome structure

Correct Answer - C

Ans: C. Breaks drug structure

β-lactamases are produced by staphylococci, Haemophilus, gonococci, etc. which inactivate penicillin G.

The β-lactamases may be present in low quantity but strategically located periplasmically (as in gram-negative bacteria) so that the drug is inactivated soon after entry, or maybe elaborated in large quantities (by gram-positive bacteria) to diffuse into the medium and destroy the drug before entry.

Beta-lactam antibiotics share the structural feature of a beta-lactam ring.

This feature is responsible for the inhibition of bacterial cell wall synthesis.

The target molecules are peptidoglycan cross-linking enzymes (e.g. transpeptidases and carboxypeptidases) which can bind beta-lactam antibiotics (penicillin-binding proteins, PBP).

Bacterial cell death is initiated by beta-lactam antibiotic-triggered release of autolytic enzymes.

In contrast to gram-positive bacteria (absence of an outer membrane), the antibiotic has to penetrate through porins of the outer membrane of gram-negative bacteria before touching PBP's.

Bacterial resistance to beta-lactam antibiotics includes modification

of porins (permeability barrier) and of targets (low affinity of PBP's for the drug), production of inactivating enzymes (beta-lactamases) and inhibition of release of autolytic enzymes.
Ref: K. D. Tripathi 7th Edition. Page. 717 – 720
ncbi.nlm.nih.gov/pubmed/8314292

653. A patient on lithium therapy developed hypertension. He was started on Thiazide for hypertension. After a few days, he developed coarse tremors and other symptoms suggestive of lithium toxicity. What is the probable mechanism of interaction?

a) Thiazide increases the tubular reabsorption of lithium

b) Thiazide inhibits the metabolism of lithium

c) Thiazides act as an add on the drug to lithium

d) All of the above

Correct Answer - A

Ans: A. Thiazide increases the tubular absorption of lithium

Drug Interaction:

- Diuretics + Lithium = Decreased excretion—rise in Li + level - toxicity;
- Diuretics (thiazide, furosemide) by causing Na + loss to promote proximal tubular reabsorption of Na + as well as Li + → plasma levels of lithium rise. Potassium-sparing diuretics cause milder Li + retention.
- Management: Reduce dose of lithium and monitor level.

Ref: K. D. Tripathi 7th Edition. Page. 449, 932

654. Which drug acts via the tyrosine kinase receptor?

a) Insulin

b) TSH

c) LH

d) MSH

Correct Answer - A

Ans: A. Insulin

Insulin acts on specific receptors located on the cell membrane of practically every cell, but their density depends on the cell type: liver and fat cells are very rich.

The insulin receptor is a receptor tyrosine kinase (RTK) which is a heterotetrameric glycoprotein consisting of 2 extracellular α and 2 transmembrane β subunits linked together by disulfide bonds.

Ref: K. D. Tripathi 7th Edition. Page. 261

655. Pegloticase is used for the treatment of an Ankylosing spondylosis

a) Reactive Arthritis

b) CPPD

c) Chronic tophaceous gout

d) Refractory Rheumatoid arthritis

Correct Answer - C
Ans: C. Chronic tophaceous gout
Pegloticase:

- Pegloticase is a medication for the treatment of the severe, treatment of refractory chronic gout.
- It is a third-line treatment in those in whom other treatments are not tolerated.

Ref Gout and other crystal arthropathies by Robert Terkettaud]

656. Fluoroquinolone contraindicated in liver disease is

a) Levofloxacin

b) Pefloxacin

c) Ofloxacin

d) Lomefloxacin

Correct Answer - B
Ans: B. Pefloxacin
Pefloxacin has longer t½: accumulates on repeated dosing achieving plasma concentrations twice as high as after a single dose.
Because of this, it is effective in many systemic infections as well.
The dose of pefloxacin needs to be reduced in liver disease, but not in renal insufficiency.
Ref: K. D. Tripathi 7th Edition. Page. 713

657. At a high altitude of 3000 m, a person complains of breathlessness. All of the following can be used for the management of this person except?

a) Intravenous digoxin

b) Oxygen supplementation

c) Immediate descent

d) Acetazolamide

Correct Answer - A

Ans: A. Intravenous digoxin

Management of AMS follows three axioms: a) further ascent should be avoided until the symptoms have resolved, b)patients with no response to medical treatment should descend to a lower altitude and c) if and when HACO is suspected, patients should urgently descend to a lower altitude.

Descent and supplementary oxygen are the treatments of choice and for severe illness, the combination provides optimal therapy. Remarkably, a descent of only 500 to 1000 m usually leads to resolution of acute mountain sickness while high-altitude cerebral edema(HACO) may require further descent. Simulated descent with portable hyperbaric chambers, now commonly available in remote locations, are also effective.

Medical therapy becomes crucial when the descent is not immediately possible.

Ref: ***https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4923381/#!po=***

658. A patient with diabetes and COPD developed postoperative urinary retention. Which of the following drugs can be used for short term treatment to relieve the symptoms of this person?

a) Bethanechol

b) Methacholine

c) Terazosin

d) Tamsulosin

Correct Answer - A
Ans: A. Bethanechol
Bethanechol is a preferred drug in the treatment of postpartum and **postoperative** nonobstructive **urinary retention**, and it also can counteract **bladder** dysfunction often seen with phenothiazines and tricyclic antidepressants.
It can afford symptomatic relief in congenital megacolon and gastroesophageal reflux but is rarely used for these.
Ref: ***https://www.pdr.net/drug-summary/Urecholine-bethanechol-chloride-801*****,**
K. D. Tripathi 7th Edition. Page. 104

659. Drug of choice for invasive aspergillosis is

a) Posaconazole

b) Voriconazole

c) Liposomal AMB

d) Caspofungin

Correct Answer - B
Ans: B. Voriconazole
The preferred treatment of primary IA is voriconazole, which has been found to be superior to amphotericin B.
Azoles interfere with the synthesis of ergosterol found in the fungal cell membrane, whereas polyenes -- such as amphotericin B -- interfere with ergosterol function.
An echinocandin that disrupts fungal cell wall synthesis – caspofungin -- and itraconazole have been approved for salvage therapy of IA.
Ref: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4200583/

660. Which of the following drugs acts by inhibiting the transcription of DNA to RNA?

a) Rifampicin

b) Nitrofurantoin

c) Ciprofloxacin

d) Novobiocin

Correct Answer - A
Ans: A. Rifampicin
Overall **inhibition** of **RNA** synthesis by **rifampicin** is caused by a destabilizing effect on the binding of the intermediate oligonucleotides to the active enzyme-**DNA** complex.
Rifampicin itself can only interact specifically with **RNA** polymerase if the enzyme is free or in a binary complex with **DNA**.
Ref: ***https://www.ncbi.nlm.nih.gov/pmc/articles/PMC327649/***

661. A patient was recently started on Fluphenazine. A few weeks later, he developed tremors, rigidity, bradykinesia, and excessive salivation. The first line of management for this patient is

a) Selegiline

b) Trihexyphenidyl

c) Pramipexole

d) Amantadine

Correct Answer - B
Ans: B. Trihexyphenidyl
* Fluphenazine may block the effects of agents used to treat Parkinson's disease such as levodopa/carbidopa.
*** Trihexyphenidyl**is an antispasmodic drug that exerts a direct inhibitory effect on the parasympathetic nervous system.
- It also has a relaxing effect on smooth muscle.
- It is indicated in all forms of Parkinsonism.

* Trihexyphenidyl works as an anticholinergic and is used for the treatment of tremors, spasms, stiffness, and weak muscle control seen in patients with Parkinson’s disease.
- It can also be used for the prevention or treatment of similar muscular conditions which are caused by certain central nervous system (CNS) drugs such as fluphenazine, haloperidol, chlorpromazine.

Ref: https://www.ncbi.nlm.nih.gov/books/NBK519488/, https://www.ncbi

662. A person was given a muscle relaxant that competitively blocks nicotinic receptors. Which of the following drugs is used for reversal of muscle relaxation after surgery?

a) Neostigmine

b) Carbachol

c) Succinylcholine

d) Physostigmine

Correct Answer - A
Ans: A. Neostigmine
Neostigmine has been traditionally used as the agent of choice to **reverse** Neuromuscular Blockade (NMB) **after muscle** paralysis during general anesthesia.
Anticholinesterases (neostigmine) are generally used to reverse the effects of neuromuscular blocking agents.
Ref: https://www.hindawi.com/journals/cria/2017/8197035/

663. Which of the following anticancer drugs are competitive inhibitors of tyrosine kinase –

a) Imatinib and sunitinib

b) Letrozole

c) Bicalutamide

d) Fulvestrant

Correct Answer - A
Ans. is 'a' i.e., Imatinib and sunitinib
Molecular targeted agents
Tyrosine kinase inhibitors
Competitive inhibitors → Imatinib, Nilotinib, Sunitinib, Dasatinib, Erlotinib, Gefitinib, Lapatinib, Sorafenib (Remember all end with ' nib').
Monoclonal antibodies → Cetuximab, panitumumab.
HER_2/neu (ERB B_2) inhibitors Monoclonal antibody - Trastuzumab.
Targeted antibody → Gemtuzumab (anti CD-33), Rituximab (anti - CD20), Alemtuzumab (anti CD-52).
Vascular endothelial growth factor (VEGF) inhibitor → Monoclonal antibody - Bevacizumab.
Proteosome inhibitors → Bortezomib.
Histone deacetylase inhibitor → Vorinostat
DNA - methyltransferase inhibitor → 5-azacytidine, 2-deoxy-5 azacytidine
All - trans-retinoic acid.
Biological response modifier - Recombinant IL-2 (aldesleukin, denileukin)