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Ph.D. Entrance Examination of PHARMACY

1. Which route of administration is most likely to subject a drug to a first pass effect?
   a) Intravenous
   b) Oral
   c) Sublingual
   d) Inhalational

2. If a drug is repeatedly administered at dosing intervals that are equal to its elimination half-life, the number of doses required for the plasma concentration of the drug to reach the steady state is
   a) 2 to 3
   b) 4 to 5
   c) 6 to 7
   d) 8 to 9

3. Which of the following is classified as belonging to the tyrosine kinase family of receptors?
   a) GABA-A receptor
   b) Adrenergic receptor
   c) Insulin receptor
   d) Nicotinic receptor

4. The principal action of noscapine is
   a) Analgesic
   b) Antiemetic
   c) Antitussive
   d) Antihistaminic

5. The short duration of action of thiopental is thought to be due to
   a) Metabolism
   b) Redistribution
   c) Excretion
   d) Tachyphylaxis

6. Which of the following is not an alkylating agent?
   a) Cytarabine
   b) Chlorambucil
   c) Cyclophosphamide
   d) Thiotepa

7. Oral hypoglycemic agents increase the metabolism of
   a) Propranolol
   b) Penicillin
   c) Lidocaine
   d) Digitoxin

8. The most specific agent for the treatment of petitmal epilepsy is
   a) Carbamazepine
   b) Phenytoin
   c) Gabapentin
   d) Ethosuximide

9. Antihypertensive agents that act primarily at arterioles include:
   a) Hydralazine
   b) Minoxidil
   c) Diazoxide
   d) All of the above

10. A diuretic agent that is potassium-sparing and does not depend upon the adrenal cortex for action is
    a) Spironolactone
    b) Triamterene
    c) Ethacrynic acid
    d) Chlorothiazide

11. Valerian has a peculiar odour which is because of the presence of chemical constituent
    a) Valerenic acid
    b) Isovaleric acid
    c) Hydroxyvalerenic acid
    d) Acetoxyvalerenic acid

12. Which of the following is true for the structure of Artimisnin
    a) A sesquiterpene lactone and an organic epoxide.
    b) A sesterpene lactone and an organic endoperoxide.
    c) A sesterpene lactone and an organic epoxide.
    d) A sesquiterpene lactone and an organic endoperoxide.

13. Generally used composition of Dragendroff's reagent is
    a) bismuth subnitrate, tartaric acid, and sodium iodide
    b) bismuth subnitrate, phosphoric acid, and potassium iodide
    c) bismuth subnitrate, tartaric acid, and potassium iodide
    d) bismuth subnitrate, phosphoric acid, and sodium iodide

14. Which of the following is true for ergometrine?
    a) Its water soluble and gives green fluorescence.
    b) Its water insoluble and gives green fluorescence.
    c) Its water soluble and gives blue fluorescence.
    d) Its water insoluble and gives blue fluorescence.

15. Two characteristic UV absorption bands i.e. Band I (320-385nm) and Band II (250-285nm) is present in
    a) Quercetin
    b) Menthol
    c) Stigmasterol
    d) None of the above

16. The end products of Shikimic acid pathway are
    a) Terpenes
    b) Phenolics
    c) Both a and b.
    d) None of the above

17. Which of the following is true in terms of herbal drug adulteration.
    a) Digitalis leaves are adulterated with mentha leaves.
    b) Mangosteen fruits are used for Bael fruits.
    c) Tinnevelly senna is adulterated with primrose leaves.
    d) None of the above

18. As per Ayurveda, Withania somnifera is used in the ailment of
    a) Cardiac disorders
    b) Sleep disorders
    c) Sexual disorders
    d) Digestive disorders

19. Calcium present in plant tissue culture nutrient media is the component of which plant cell organelle?
    a) Endoplasmic reticulum
    b) Cell wall and cell membrane
    c) Mitochondria
    d) Nucleus

20. Ergometrine is which of the following confirmation?
   a) Laevo
   b) Dextro
   c) cis
   d) trans
21. Which one of the following is not used in QSAR.
   a) Molecular connectivity index
   b) Molecular similarity index
   a) c)Topological polar surface area
   c) Partition coefficient
22. Which of the following terms refers to the molecular modelling computational method that uses equations obeying the laws of classical physics?
   a) Quantum mechanics
   b) Molecular calculations
   c) Molecular mechanics
   d) Quantum theory
23. It is unlikely that a 'cure' of HIV is possible with current drugs because:
   a) Even in combination current drugs do not completely block viral replication
   b) They do not penetrate to cells
   c) They cannot block viral transcription from integrated viral DNA
   d) They cannot penetrate to the CNS
24. The range of IR absorption for N-H bond is _____ cm-1
   a) 1700
   b) 3400
   c) 780
   d) 1100
25. RBCs are hemolysed by _____ in G6PD deficiency.
   a) Clofazimine
   b) Dapsone
   c) Streptomycin
   d) All of the above
26. Assay of the chloride ion in intraperitoneal dialysis fluid is carried out by
   a) Complexometric titration
   b) Gravimetric method
   c) Mohr's method
   d) Karl Fischer titration
27. Nitrogen estimation is done by
   a) Kjeldahl method
   b) Gasometry
   c) Karl Fischer
   d) None of the above
28. Phosphodiesterase inhibitor is used as
   a) Vasoconstrictor
   b) Vasodilator
   c) Hypotension
   d) Antidiuretic agent
29. Good Laboratory Practice (GLP) certification is issued in India by
   a) Controller, Weights and measure, Government of India
   b) Bureau of Indian Standard (BIS), Government of India
   c) Department of science and Technology, Government of India
   d) Drug controller General of India (DCGI), Government of India

30. Magic angle NMR is carried out at which angle?
   a) 52.7
   b) 54.7
   c) 56.7
   d) 58.7

31. An ingredient that is added to a tablet formula to improve flow properties into a die for compression is known as a/an
   a) disintegrant
   b) dissolution-enhancing agent
   c) lubricant
   d) surfactant

32. Which of the following is the first process that must occur before a drug can become available for absorption from a tablet dosage form?
   a) dissolution of the drug in the GI fluids
   b) dissolution of the drug in the epithelium
   c) ionisation of the drug
   d) dissolution of the drug in the blood

33. An antibiotic which has a half-life of one day is formulated as a 200 mg tablet.
How many milligrams of antibiotic would remain after three days?
   a) 25
   b) 50
   c) 100
   d) 150

34. Sodium chloride equivalents are used to estimate the amount of sodium chloride needed to render a solution isotonic. The sodium chloride equivalent or "E" value may be defined as the
   a) amount of sodium chloride that is theoretically equivalent to one gram of a specified chemical
   b) amount of a specified chemical theoretically equivalent to one gram of sodium chloride
   c) milliequivalents of sodium chloride needed to render a solution isotonic
   d) weight of a specified chemical that will render a solution isotonic

35. For many drugs, bioavailability can be evaluated using urinary excretion data. This is based on the assumption that
   a) bioavailability studies can be done only on drugs that are completely excreted unchanged by the kidneys
   b) drug levels can be measured more accurately in urine than in blood
   c) a drug must be first absorbed into the systemic circulation before it can appear in the urine
   d) all of the administered dose can be recovered from the urine

36. The renal excretion of a weakly acidic drug of pKa 3.5 will be more rapid in alkaline urine than in acidic urine because
   a) all drugs are excreted more rapidly in alkaline urine
   b) the drug will exist primarily in the unionised form, which cannot easily be reabsorbed
   c) the drug will exist primarily in the ionised form, which cannot be easily reabsorbed
   d) weak acids cannot be reabsorbed from the kidney tubules

37. Indicate which one of the following statements is correct. The main reason why surfactants form micelles is because:
   a) There is a decrease of entropy when surfactant molecules are transferred from water to a micelle
   b) There is an increase of entropy when surfactant molecules are transferred from water to a micelle
   c) There is a large decrease of enthalpy when micelles form
   d) There is a large increase of enthalpy when micelles form

38. Indicate which one of the following statements is correct. In the solubilisation of poorly soluble drugs by aqueous surfactant solutions:
    a) Non-polar drugs are usually solubilised in the palisade layer of a non-ionic micelle
    b) Polar drugs are usually solubilised in the micelle core
    c) Drugs with a high octanol/water partition coeffi cient will usually have a high micelle/water partition coefficient
    d) The solubilisation capacity of a non-ionic surfactant usually decreases with increase of temperature

39. Which of the following lead to attractive interaction between two particles?
    a) Born forces
    b) electrostatic forces
    c) van der Waals forces
    d) steric forces

40. Indicate which of the following statements is true. Two particles will repel each other when:
    a) The primary maximum is very small.
    b) The secondary minimum is less than the thermal energy.
    c) The primary minimum is very deep.
    d) None of the above

Answer Key (PHARMACY)

1. b
2. b
3. c
4. c
5. b
6. a
7. d
8. d
9. d
10. b
11. b
12. d
13. c
14. c
15. a
16. b
17. b
18. c
19. b
20. b
21. b
22. c
23. c
24. b
25. b
26. c
27. a
28. b
29. d
30. b
31. c
32. a
33. a
34. a
35. c
36. c
37. b
38. c
39. c
40. b