B.Pharm. (CBCS Pattern) Semester-VI

BP604T - Biopharmaceutics and Pharmacokinetics

P. Pages : 3 **GUG/W/24/14140**

Time : Three Hours * 5 6 3 7 * Max. Marks : 75

Notes : 1. All questions are compulsory.
2. Illustrate your answers wherever necessary with the help of neat sketches.

1. Multiple Choice Questions. **20x1 =20**

1) Drug ------- refers to the study of processes occurring after the absorption of drug.
   a) Absorption b) Metabolism
   c) Disposition d) None of the above

2) Which form of drug shows rapid dissolution rate?
   a) Crystalline b) Amorphous
   c) Hydrate d) None of the above

3) --------- is used to study gastric emptying.
   a) Barium sulphate b) Aluminium sulphate
   c) Calcium sulphate d) Aluminium hydroxide

4) Area in which the carrier system is most dense is called as -------.
   a) Therapeutic window b) Absorption index
   c) Therapeutic index d) Absorption window

5) Which vitamin molecules will bind to $\alpha 2$ globulin?
   a) Vitamin b complexes b) Vitamin a and vitamin b
   c) Vitamin A, D, E, K d) Steroids bind to alpha 2 globulin, not vitamin

6) Protein binding -------- the distribution of drugs.
   a) Decrease b) Increase
   c) No change d) None of the above

7) What is the name of the drug binding site III of HSA?
   a) Tamoxifen binding site b) Digitoxin binding site
   c) Diazepam binding site d) Warfarin and azapropazone binding site

8) Which of the following compounds are used as agents to determine Glomerular Filtration Rate?
   a) Calcium ion b) Albumin
   c) Creatinine d) Calcium carbonate

9) Conjugation is -------
   a) Process of drug reduction by special enzymes
   b) Process of drug oxidation by special oxidases
   c) Coupling of a drug with an endogenous substrate
   d) Solubilization in lipids

10) Which of the following forms inclusion complex and improves aqueous solubility and dissolution rate?
   a) Cyclodextrins b) PEG
   c) PVT d) Poloxamer

11) Which is pharmacokinetic parameters?
   a) Therapeutic index b) Peak Plasma concentration
   c) Intensity of action d) Maximum safe concentration

12) In which model the compartments are joined to one another in a series like compartment of a train?
   a) Mammillary model b) Catenary model
   c) Physiological models d) Non compartmental

13) Peak plasma concentration is the point of time when absorption rate is-
   a) Greater than rate of elimination
   b) Less than rate of elimination
   c) Equal to rate of elimination
   d) None of the above

14) The number of rate constants will appear in three compartment open, intravenous administration.
   a) 3 b) 5
   c) 6 d) 4

15) Which of the following is the half-life of zero order reaction.
   a) t1/2 = C0/2K0 b) t1/2 = 0.693/2K0
   c) t1/2 = C0/2 d) t1/2 = 2K0/C0

16) The mathematical relationship between plasma drug concentration and pharmacological response is called as ------
   a) PK modelling b) PD modelling
   c) PK-PD modelling d) None of the above

17) Method of residuals is also known as -------
   a) Feathering method b) Peeling method
   c) Both a and b d) None of above

18) Which one of these is correct Michaelis – Menten equation?
   a) -dC/dt = Vmax C/Km + C b) dC/dt = Vmax C/Km + C
   c) -dC/dt = Vmax C/Km d) -dC/dt = Km + C / Vmax C

19) When steady state blood drug levels achieved.
   a) When rate of drug input is less than rate of drug output
   b) When rate of drug input is equal to rate of drug output
   c) When rate of drug input is greater than rate of drug output
   d) When 20% of absorbed dose is eliminated

20) Loading doses are ------- than maintenance doses.

a) Smaller b) Larger

c) Similar to d) Larger or smaller

2. Solve **any two.** **10x2 =20**

a) List various factors affecting absorption and explain in detail pharmaceutical factors affecting absorption of drugs from GIT tract.

b) Define dissolution and discuss dissolution test apparatus.

c) What are pharmacokinetic models? Explain various types with their significance.

3. Solve **any seven.** **5x7 =35**

a) Define the terms:

i) Bioequivalence ii) Absolute Bioavailability

iii) Pharmaceutical equivalence iv) Apparent Volume of distribution

v) Biotransformation

b) Describe Michaelis Menten equation considering values of Km and C.

c) Write a note on Topical and intra-nasal routes of administration.

d) Define clearance. Discuss in detail factor affecting renal clearance or renal excretion.

e) Give an account on Loading and maintenance dose with their significance.

f) Explain the plasma drug concentration time profile.

g) Write the significance and limitations of pH partition hypothesis.

h) Compare the compartment model and Physiological model.

i) Write the methods of estimation of Bioavailability.

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