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**B. Pharma. (Sixth Semester)
EXAMINATION, MAY-JUNE, 2022**

Paper Fourth

(Biopharmaceutics and Pharmacokinetics)

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt all sections as directed.

(Section-A)

(Objective/Multiple Choice Questions)

(20×1=20 mark each)

Note- Attempt all questions.

Give the correct answer for the following.

1. Which of the following drugs will readily cross the blood brain Barrier?
 - (A) Penicillin
 - (B) Salicylic Acid
 - (C) Dopamine
 - (D) Thiopental

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2. Most of the drugs are absorbed in G.I. Tract by
 - (A) Filtration
 - (B) Passive Diffusion
 - (C) Active Transport
 - (D) Endocytosis and Exocytosis
3. Which of the following factors do not influence the disintegration time of a tablet?
 - (A) Binder
 - (B) Coating Material
 - (C) Lubricant
 - (D) Hardness
4. Dihydropyridine redox system issued as a drug carrier to cross the
 - (A) Placental Barrier
 - (B) Blood-Testis Barrier
 - (C) Blood-Brain barrier
 - (D) Blood-CSF Barrier
5. Onset time and Onset of action depends upon
 - (A) T_{max}
 - (B) C_{max}
 - (C) Clearance
 - (D) Elimination

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6. Which of the following is not a binding site of Human Serum Albumin?
- (A) Warfarin
 - (B) Transcortin
 - (C) Digitoxin
 - (D) Tamoxifen
7. Therapeutic index is
- (A) $\frac{C_{max}}{T_{max}}$
 - (B) Intensity of action
 - (C) Area under curve
 - (D) $\frac{\text{Maximum Safe Concentration}}{\text{Minimum Effective Concentration}}$
8. Half life of 1st order Kinetics is equal to
- (A) $0.693/K$
 - (B) $0.264/K$
 - (C) $0.5K/Co$
 - (D) $0.005K/Co$
9. Mean Residence time (MRT) is equal to
- (A) $AUC/AUMC$
 - (B) $AUMC/AUC$
 - (C) Fe/Ke
 - (D) $0.693/K$

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10. Which of the given tissues comes under Peripheral compartment?
- (A) Heart
 - (B) Liver
 - (C) Skin
 - (D) Kidney
11. Effective Partition coefficient $\left(\frac{K_o}{w}\right)$ is directly proportional to
- (i) Fraction of drug ionized at pH 7.4
 - (ii) Fraction of drug unionized at pH 7.4
 - (iii) $\frac{K_o}{w}$ of ionized drug
 - (iv) $\frac{K_o}{w}$ of unionized drug
- Which of the above statements are correct
- (A) i & ii
 - (B) ii & iii
 - (C) ii & iv
 - (D) i & iv
12. Method of residuals is used for the determination of
- (A) Half Life
 - (B) Absorption Rate Constant
 - (C) Shelf Life
 - (D) Elimination Rate Constant

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13. Method of residuals is also known as
- (A) Curve fitting method
 - (B) Feathering, Peeling & Stripping Method
 - (C) Both (A) & (B)
 - (D) None of the above
14. In Flip-Flop Phenomena
- (A) $\frac{K_e}{K_a} > 3$
 - (B) $\frac{K_e}{K_a} = 3$
 - (C) Both (A) & (B)
 - (D) $\frac{K_e}{K_a} \geq 3$
15. _____ is a manner in which a drug is taken
- (A) Dosage Regimen
 - (B) Dosage Volume
 - (C) Dosage Loading
 - (D) Dose Ratio
16. The ratio of loading dose ($X_{o,L}$) to maintenance dose (X_o), in case of multiple oral dosing, is called as
- (A) Fluctuation
 - (B) Dose Ratio
 - (C) Accumulation index
 - (D) All of the above

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17. The volume of distribution of drug administered at a dose of 300 mg and exhibiting 30 ug/ml instantaneous concentration in Plasma shall be
- (A) 10 litre
 - (B) 100 litre
 - (C) 1 litre
 - (D) 0.1 litre
18. At C_{max} , Rate of elimination is _____ Rate of absorption
- (A) Greater than
 - (B) Smaller than
 - (C) Equal to
 - (D) Not related with
19. Which of the following drugs shows non linearity in metabolism due to enzyme induction?
- (A) Propranolol
 - (B) Penicillin
 - (C) Thiopental
 - (D) Carbamazepine
20. The range of Absolute Bioavailability is
- (A) 0 to 1
 - (B) -1 to 100
 - (C) -1 to +1
 - (D) 1 to 100

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(Section- B)

(Short Answer Type Questions)

(7×5=35 marks each)

Note- Attempt all questions.

1. Differentiate between renal clearance and renal excretion.
2. Discuss the objectives of bioavailability.
3. Explain the kinetics of Protein binding.
4. What is pH-partition hypothesis? Give its limitations.
5. What is apparent volume of distribution? Explain the factors affecting it.
6. Define the following:
 - (i) Half life
 - (ii) Total body clearance
 - (iii) Volume of distribution
 - (iv) Bioavailability
 - (v) Mean residence time

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7. Describe the test for detection of non-linearity in pharmacokinetic parameters.

(Section - C)

(Long Answer Type Questions)

(10 marks each)

Note : Attempt any two questions.

1. Discuss the physicochemical factors affecting gastrointestinal absorption of drug from its dosage form.
2. Explain various methods for measurement of Bioavailability.
3. How will you determine pharmacokinetic parameters of one compartment open model for intravenous bolus administration?