DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Summer 2022

Course: B. Pharmacy **Sem: VI**

Subject Name: Biopharmaceutics & Pharmacokinetics **Subject Code: BP604T**

Max. Marks: 75 **Date: 22/07/2022** **Duration: 3.45 Hrs.**

Instructions –

1. **All questions are compulsory**
2. **Answers to MCQs should be written in full sentences**
3. **Draw diagrams / figures wherever necessary**
4. **Figures to right indicate full marks**

Q. 1. Multiple Choice Questions (MCQs) = 20 x 1 = 20 (All the questions are compulsory)

i) Drug absorption by passive diffusion is

a) Non ionic diffusion b) Energy dependent

c) Uphill transport d) Saturable

ii) Acidic drugs mainly bind to

a) α- Acid glycoprotein b) Antigens

c) human serum albumin d) Vitamin A

iii) In general, the presence of food in the gastrointestinal tract (GIT) reduces the rate and extent of drug absorption due to

a) Enhanced presystemic drug elimination

b) High viscosity of the GIT contents

c) Increased adsorption of the drug on the Gl contents

d) Increased dissolution of the drug in the GI contents

iv) Calculate the volume of distribution of drug, when 300 mg dose is administered showed the initial blood drug concentration of 30 microgram/mL?

a) 9 L b) 10 L c) 100 L d) 90 L

v) Gaseous and volatile substances are excreted through one of the following routes.

a) Dermal b) Pulmonary

c) Renal d) Salivary

vi) Which is NOT a marker for renal drug excretion?

a) Creatinine b) Glucose

c) Inulin d) Probencid

vii) One of the following is the phase II drug biotransformation reaction?

a) Acetylation b) Deamination

c) Hydrolysis d) Reduction

viii) Conjugation with Glutathione useful for

a) water soluble metabolite formation b) detoxification

c) enhancing biological half life d) Reduction

ix) What does the word "open" mean in the one compartment open model?

a) Unidirectional input and output b) The drug readily mixes with the blood

c) The drug easily enters d) Easy absorption

x) In one compartment open model drug disposition, the drug is eliminated by one of the following patterns:

a) Biexponentially b) Nonexponentially

c) Triexponentially d) Monoexponentially

xi) In one compartment open model drug disposition, the assigned one compartment is:

a) Body b) Blood

c) Gastrointestinal tract d) Liver

xii) In which of the model peripheral compartments are connected to a central compartment in series?

a) Caternary model b) Physiologic model

c) Compartment model d) Mammillary model

xiii) Steady state plasma concentration (Css) depends on following factors except

a) Clearance b) Dosing interval c) Dose d) Elimination half life

xiv) Total systemic clearance in two compartment open model is calculated by

a) hybrid first order constants for slow elimination phase and apparent volume of distribution

b) hybrid first order constants for slow elimination phase and Clearance

c) hybrid first order constants for slow elimination phase and AUC

d) hybrid first order constants for slow elimination phase and rapid distribution phase

xv) The dosing interval depends on one of the following

a) Apparent volume of distribution b) AUC

c) Clearance d) Plasma Elimination half life

xvi) The loading dose of a drug is based upon the desired plasma drug concentration and

a) Time taken for complete elimination

b) Percentage of drug excreted unchanged in urine

c) Percentage of drug bound to plasma protein

d) Apparent volume of distribution

xvii) One of the following statements is correct with respect to non-linear pharmacokinetics.

a) First order b) First order followed by zero order

c) Pseudo first order d) Zero order

xviii) Xenobiotic means

a) foreign to body b) Produced by bacteria

c) produced by xerophytes d) synthesized in the body

xix) The volume of distribution of a drug is

a) an expression of total body volume

b) a measure of total fluid volume

c) a relationship between the total amount of drug in body and plasma concentration of drug

d) proportional to bioavailability of the drug

xx) What is the reason of complicated penetration of some drugs through Blood brain barrier?

a) High lipid solubility of drug

b) High endocytosis degree in a brain capillary

c) Absence of pores in the brain capillary endothelium

d) Meningitis

Q. 2. Long Answers) = 2 x 10 = 20 (Answer 2 out of 3)

i) Describe One compartment open model. Deduce the monoexponential equation of disposition of drugs. Illustrate assessment of Pharmacokinetic parameters after IV bolus administration of drug for One compartment open model.

ii) Define absorption. List factors influencing absorption of drugs. Discuss physicochemical factors in detail.

iii) Define Bioavailability and bioequivalence. Explain Pharmacokinetic & Pharmacodynamic Methods of assessing bioavailability.

Q. 3. Short Answers = 7 x 5 = 35 (Answer 7 out of 9)

i) List USP *In vitro* dissolution test apparatus and illustrate any 4 apparatus.

ii) Compare active and passive transport of drug absorption mechanism.

iii) Differentiate between loading dose and maintainance dose.

iv) Describe physiological models.

v) Illustrate Phase I metabolism reactions with example.

vi) Explain Wagner Nelson method for estimation of Ka.

vii) Illustrate factors causing Non-linearity in pharmacokinetics with example of drugs.

viii) Explain protein binding of drugs.

ix) Explain mechanism of renal excretion. State the equation of renal clearance. List factors affecting renal excretion of drugs.

------END OF THE PAPER------