BRAINWARE UNIVERSITY

Term End Examination 2023
Programme – B.Pharm-2019/B.Pharm-2020
Course Name – Biopharmaceutics and Pharmacokinetics/Biopharmaceutics and Pharmacokinetics – Theory
Course Code - BP604T
(Semester VI)

Full Marks : 75 **Time : 3:0 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 20=20

1. *Choose the correct alternative from the following :*

(i) Choose the option which is not a parameter to be considered for determining bioavailability.

a) Cmax b) Tmax
c) AUC d) Dose

(ii) Select the model in which peripheral compartments are connected to a central compartment.

a) Compartment model b) Caternary model
c) Physiologic model d) Mammillary model

(iii) Distinguish the characteristic of encapsulation or coating dissolution-controlled release systems.

a) Microencapsulation using slowly dissolving materials b) Prolonged their residence in the GIT and release
c) Release only at a specific drug d) Employ waxes to control the rate of dissolution

(iv) The onset of drug action represents the rate of-

a) Drug absorption b) Drug dissociation
c) pH d) GI motility

(v) Distinguish the drug which cannot enter the cell membrane.

a) Ionized drug b) Unionized drug
c) Hydrolyzed drug d) Unhydrated drug

(vi) Select the ideal solubility rate of an orally administered drug in the pH range of 2 to 8.

a) 3-4 mg/ml b) 4-6 mg/ml
c) 7-8 mg/ml d) 1-2 mg/ml

(vii) Select the mechanism of drug excretion for skin excretion.

a) Active secretion b) Glomerular secretion

c) Passive diffusion
d) Passive reabsorption

(viii) In the sequence of events in the drug absorption from orally administered solid dosage, select the step which comes at first.

a) Disintegration
b) Deaggregation
c) Dissolution
d) Absorption

(ix) Identify the option which is not a theory of Drug dissolution.

a) Diffusion layer model
b) Fick\'s law of diffusion
c) Interfacial barrier model
d) Penetration or surface renewal theory

(x) From the following, name the option which is a physicochemical property of drug substance.

a) Drug solubility
b) Disintegration time
c) Age of patient
d) Dissolution time

(xi) If distribution of drug is slower than process of biotransformation and elimination, select the possible outcome.

a) It will cause high blood level of drug
b) It will cause low blood level of drug
c) Cause failure to attain diffusion equilibrium
d) No effect

(xii) In pharmacokinetics, the term 'rate' refers to a change in which of the following measurements over time.

a) Drug dose
b) Drug elimination
c) Concentration of drug in plasma
d) Drug metabolism

(xiii) Name the kind of molecules that cannot be absorbed pore transport.

a) Low Molecular weight molecules
b) Water-soluble drugs
c) Molecules up to 400 Dalton
d) Molecules greater than 400 Dalton

(xiv) The loading dose of a drug is usually depends on -

a) Total clearance of the drug
b) Plasma protein binding percentage
c) Fraction of drug excreted unchanged in urine
d) Apparent volume of distribution and desired steady state drug concentration in plasma

(xv) Choose the correct option which expresses 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

(xvi) Choose the case, in which t1/2 is independent of drug concentration.

a) First order
b) Zero order
c) Second order
d) Non-linear

(xvii) For a certain drug, the bile flow rate is 0.7 ml/mm, the biliary drug concentration is 2g/ml and the plasma drug concentration is 0.8g/ml. Calculate the bile clearance.

a) 1.50 ml/mm
b) 1.75 ml/mm
c) 2.75 ml/mm
d) 3 ml/mm

(xviii) Choose the mathematical equation for bioavailable fraction.

a) 1/Bioavailable dose
b) 1/Administered dose
c) Bioavailable dose/ Administered dose
d) Administered dose/ Bioavailable dose

(xix) To have a plasma distribution value of 900 ml and plasma drug concentration to be 1.2 mg/ml, calculate the amount of drug that should be given to the patient.

a) 1080 ml
b) 1080 g
c) 1080 mg
d) 1g/ml

(xx) From the following options, identify the term used for, \"the time period for which the plasma concentration of drug remains above minimum effective concentration\".

a) Onset of time
b) Onset of action
c) Duration of drug of action
d) Therapeutic range

Group-B

(Short Answer Type Questions) 5 x 7=35

2. Discuss in detail about protein binding and its significance. (5)
3. Explain various non-renal routes of excretion. (5)
4. Define bioavailability. Explain the objectives of bioavailability studies. (5)
5. With a neat diagram, describe the drug absorption through blood brain barrier. (5)
6. Describe in detail about various physico-chemical factors affecting drug absorption. (5)
7. Explain the apparent zero order kinetics. (5)

OR

Explain the parameters used in adjustment of dosage regimen. (5)

8. Explain the criteria for obtaining valid urinary excretion data. (5)

OR

Correlate loading dose and maintenance dose. (5)

Group-C

(Long Answer Type Questions) 10 x 2=20

9. Explain the process of renal excretion of drugs. (10)
10. Explain the process, how bioavailability can be demonstrated in vitro. (10)

OR

Explain the different methods for enhancing bio-availability of drugs. (10)

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