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MPH 202 T

Roll No. of candidate | | | | | | | | | | |

2022

M.Pharm. 2nd Semester End-Term Examination

ADVANCED BIOPHARMACEUTICS AND PHARMACOKINETICS

(New Regulation)

Full Marks – 75 Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No. 1 and any *six* from the rest.

1. Answer the following questions : (20 × 1 = 20)

(i) BCS Class II drugs are classified as

(a) High Permeability/High Solubility

(b) Low Solubility/Low Permeability

(c) Low Solubility/High Permeability

(d) High Solubility/Low Permeability

(ii) The major mechanism of drug absorption is

(a) Facilitated diffusion

(b) Passive diffusion

(c) Active Transport

(d) Pore Transport

(iii) Controlled Release from a Osmotic Pump follows

(a) Zero Order

(b) First Order

(c) Mixed Order

(d) Exponential Kinetics

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(iv) The rate of absorption will be most rapid from

(a) Solution

(b) Tablet

(c) Suspension

(d) Capsules

(v) Which of the following is most suitable for dissolution study of Transdermal Formulations?

(a) Type I

(b) Type II

(c) Type IV

(d) Type V

(vi) Which among the following utilizes statistical moment theory?

(a) Level A IVIVC

(b) Level B IVIVC

(c) Level C IVIVC

(d) Multiple Level C IVIVC

(vii) Which of the following is a Carrier mediated Transport

(a) Passive Diffusion

(b) Active Transport

(c) Pore Transport

(d) None of the above.

(viii) Binding of drug with enzymes/proteins results in

(a) Zero order kinetics

(b) First Order Kinetics

(c) Mixed order kinetics

(d) Linear Kinetics

(ix) Passive diffusion of drug is expressed by

(a) Fick's First Law

(b) Fick's second Law

(c) Zero Order

(d) First Order

(x) Which of the following is an in silico model for determining drug absorption

(a) $CaCO_2$ model

(b) Doluisio method

(c) Everted Sac Technique

(d) PAMPA model

(xi) Very _____ (strong/weak) bases are ionized in entire pH range in GIT.

(xii) Distribution of highly soluble drug is _____ (Dissolution/Permeation) limited.

(xiii) _____ is defined as study of pharmacokinetic differences of drug in various populations.

(xiv) As per IP _____ type apparatus are known as Dissolution Type I apparatus.

(xv) Noyes Whitney equation is used to describe _____.

(xvi) Maximum absorbable dose (MAD) is equal to _____.

(xvii) Protein binding of drugs help to maintain _____ condition of drug.

(xviii) Apparent Volume of distribution (Vd) = _____.

(xix) Zero order process are _____ (dependent/independent) of concentration.

(xx) Parallel designs are suitable for bioequivalence study of drugs with _____ (long/short) half life.

2. Answer any SEVEN from the following : $(7 \times 5 = 35)$

(a) Explain the Diffusion double layer model in drug absorption.

(b) What do you mean by In-vitro-in-vivo correlations (IVIVC)? Explain in brief?

(c) Explain the various pharmaceutical factors affecting drug absorption.

(d) Write a brief note on pH-Partition hypothesis and its limitations.

(e) Describe with suitable derivations 'One Compartment open model by IV Bolus dose'.

(f) Explain the Biopharmaceutical Classification Systems (BCS) with suitable examples.

(g) Write the application of pharmacokinetics in targeted drug delivery system.

(h) Explain the various methods for determining absorption of drugs in-vitro.

(i) Pharmacokmeties of 500 mg paracetamol after oral administration is best described by the equation $C = 1.18\left(e^{-0.24t} - e^{-1.6t}\right)$. Calculate the C_{max}, t_{max} and $t_{1/2}$ of the drug.

3. Answer any two out of THREE : $(2 \times 10 = 20)$

(a) (i) Write in detail about mechanism of drug absorption with suitable diagrams. (6)

(ii) Write in details about the Michaelis-Menten equation. (4)

(b) Discuss the importance and objectives of Bioequivalence study. Enlist the elements of bioequivalence study protocol. (3 + 7)

(c) (i) Explain the various biopharmaceutical Considerations in dosage form design. (6)

(ii) Classify the various methods for assessment of bioavailability. (4)