



Name :

Roll No. :

Invigilator's Signature :

CS/M.PHARM/SEM-2/MPT-206(1)/2012

2012

DRUG DELIVERY SYSTEM

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

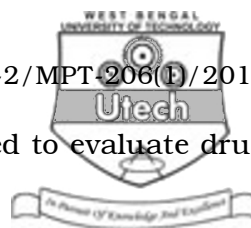
(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

- (i) In transdermal drug delivery, Azones and Pyrrolidones are used as
 - a) channeling agents
 - b) permeation enhancer
 - c) rate controlling polymers
 - d) all of these.
- (ii) Drug targeting to intracellular sites is also known as
 - a) Primary Targeting b) Secondary Targeting
 - c) Tertiary Targeting d) None of these.

- 30424(M.PHARM)



vii) Keshary-Chien apparatus may be used to evaluate drug release from

- a) Microparticles b) Nanocapsules
- c) Transdermal devices d) Osmotic pumps.

viii) The concept of chronopharmaceutics is based on

- a) Repeat release b) Circadian Rhythm
- c) Both of these d) None of these.

ix) Which of the following is true for Fick's first law of diffusion ?

- a) Refers to the non steady-state flow
- b) The amount of material flowing through a unit cross-section of a barrier in unit time is known as the concentration gradient
- c) Flux of material is proportional to the concentration gradient
- d) Diffusion occurs in the direction of increasing concentration.



- x) Which equation describes the rate of drug dissolution from a tablet ?
- a) Fick's law
 - b) Henderson-Hasselbalch equation
 - c) Michaelis-Menten equation
 - d) Noyes-Whitney equation.
- xi) Dose-dumping in controlled release formulation causes
- a) sustained action b) increased toxicity
 - c) slowing of action d) increased metabolism
- xii) Tortuosity and porosity consideration is relevant in
- a) drug release by diffusion
 - b) drug release by dissolution
 - c) drug release by erosion
 - d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Explain various types of Transdermal therapeutic systems with suitable diagrams.
3. Write a short note on permeation enhancers in transdermal delivery.



4. What are Nanoparticles ? Discuss their application as novel delivery systems.
5. Classify implantable drug delivery systems. Briefly explain their limitations.
6. Write a note on Elementary osmotic pump.
7. Describe the kinetics of drug release from Microreservoir-Dissolution-Controlled drug delivery system.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

8. a) Discuss the problems encountered in delivery of therapeutic proteins and peptides.
- b) Add a note on non-invasive means of protein delivery.

10 + 5



9. a) Enlist various drug targeting strategies.

b) Explain in details the brain specific drug delivery systems. 5 + 10

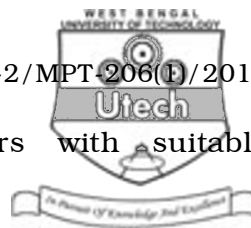
10. a) Briefly discuss the various pharmacokinetic considerations in design of CR drug delivery systems.

b) Assuming a one-compartment disposition, explain and derive the expressions for determining the zero-order drug delivery rate for a sustained release system.

$$7\frac{1}{2} + 7\frac{1}{2}$$

11. a) Discuss the special status of liposomes in novel drug delivery.

b) Mention with suitable explanations the limitations of liposomes.



12. a) Classify the Bio-adhesive polymers with suitable example of each class.

b) What are the factors affecting the mucoadhesion ?

7 + 8

13. a) What is the mechanism and drug release kinetics from Matrix Diffusion Controlled drug delivery system ?

b) Give an example of such system with fabrication technique and diagram.

c) Discuss in brief about the theories of Bio-adhesion.

6 + 5 + 4

=====