UKA TARSADIA UNIVERSITY

M.Pharm. (Pharmaceutics) (2nd Semester)

040040202 - Drug Delivery Systems

Duration: 3 Hours **Max. Marks: 70.**

Instructions:

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.
5. Draw diagrams/figures whenever necessary.

Section-1

Q-1 (A) Do as directed: **[07]**

I) Give the pharmaceutical significance of hydroxypropylmethylcellulose polymer.

II) Give the drug release mechanism form swellable polymers.

III) How does guar gum function in microbial triggered colon targeted system?

IV) Define hydrogel with example.

V) Define glass transition temperature.

VI) What is grafted copolymer?

VII) Give the mechanism of biodegradation of PLGA.

Q-1 (B) Answer the following in brief: (Any 4) **[08]**

I) Explain stimuli responsive polymers.

II) OROS CT is an osmotically controlled colon specific technique. Comment on.

III) Multiparticulate system is preferred over single unit system in treatment of local disorders of colon. Comment on.

IV) Explain the role of semi permeable membrane and osmotic agent in formulation of elementary osmotic tablet.

V) What do you mean by glucose responsive drug delivery? Explain.

VI) Enumerate the factor affecting the design of controlled drug delivery.

Q-2 Answer the following: **[10]**

A) Explain diffusion controlled systems with suitable example.

OR

A) Explain the techniques for characterization of pharmaceutical polymers.

B) Discuss formulation and mechanism of drug release from controlled porosity osmotic tablets.

OR

B) Explain microbial triggered approach for colon drug delivery system with giving suitable example.

Q-3 Answer the following in detail. (Any 2) **[10]**

A) In vivo methods for evaluation of gastroretentive dosage forms

B) Biodegradable controlled release polymers and their application

C) Factors influencing design of osmotic drug delivery

Section-2

Q-4 (A) Do as directed: **[07]**

I) Give the two examples of chemical enhancers with their mechanism of action.
II) Sonophoresis uses _____ to drive molecules into tissues.
III) What are the methods used for determination of traces of solvents in film?
IV) Enumerate the in vitro methods for measurement of bioadhesion strength.
V) Enumerate target body sites for bio-adhesive formulation.
VI) Give the role of mucin in adhesion of substrate to biological membrane.
VII) Give the ideal properties of polymers used in film formation.

Q-4 (B) Answer the following in brief: (Any 4) **[08]**

I) Give rationale for developing parenteral controlled drug release system.
II) Give merits and demerits of muccoadhesive buccal drug delivery.
III) Write briefly liposomes in parenteral drug delivery.
IV) Give the mechanism of drug release form muccoadhesive microsphere for vaginal application.
V) Mention criteria for selecting a drug candidate for developing a transdermal formulation.
VI) Explain the mechanism of drug permeation across the epithelial membranes.

Q-5 Answer the following: **[10]**

A) Drug X has following mentioned properties; gastric instability, low molecular weight, short half life and high first pass metabolism. Based on above mentioned parameters design and discuss the possible drug delivery systems with reasons.

OR

A) Discuss in detail in vitro methods to study muccoadhesion.
B) Discuss the formulation consideration for transdermal matrix film.

OR

B) What are the merits and demerits of injectable controlled release dosage forms? Discuss sustained release parenteral suspensions with suitable examples.

Q-6 Answer the following in detail. (Any 2) **[10]**

A) Mechanical permeation enhancement
B) Muccoadhesive polymers
C) Therapeutic applications of implantable drug delivery system