03/12/21 M

Roll Number ---------- (Total Number of Questions 13) (Total number of Printed Pages 01)

Programme	B. Pharmacy
Semester	7th
Subject	Novel Drug Delivery System
Subject Code	BP704T
Paper ID	78390
Time	3Hours
Maximum Marks	75

Instructions to Candidates:*No supplementary/continuation sheet will be issued to the candidates. Answer the questions precisely.*
Section A consists of Ten parts of 2 marks each (Objective Type); Attempt **ALL.*
***Section B consists of Three questions carrying 10 marks each (Long Answer); attempt any **TWO**.*
****Section C consists of Nine questions carrying 5 marks each (Short Answer); attempt any **SEVEN**.*

Section A (10 X2 = 20)

1. Give very short answers to the followings (2 marks each):

i.	What do you understand by Nasopulmonary drug delivery system?
ii.	Define a Transdermal patch.
iii.	What is the meaning of Dry powder inhaler?
iv.	Define Aerosol.
v.	Explain Progestasert.
vi.	Define a Matrix.
vii.	Define & differentiate Microcapsules and microspheres.
viii.	Give the Principle of Bio-adhesion.
ix.	Write the meaning & use of Monoclonal antibodies.
x.	Enlist various approaches to overcome ocular barriers to drug delivery.

Section B (2 X 10 = 20)

2.	What are the basic components of Transdermal Drug Delivery System? Discuss various formulation approaches of TDDS.
3.	Discuss factors affecting gastric retention of dosage forms. Write a detailed note on various approaches of GRDDS.
4.	Write formulation and applications of (2.5 each)- a) Nanoparticles c) Niosomes b) Liposomes d) Monoclonal antibodies

Section C (7 X 5 = 35)

5.	Explain different factors affecting percutaneous permeation of drug.
6.	Discuss the principle and design of Floating Drug Delivery System.
7.	Discuss Naso-Pulmonary Drug Delivery System. Write a note on – MDI and DPI.
8.	Explain Coacervation (Phase separation) technique for microencapsulation.
9.	Explain classification of liposome and explain their structural components.
10.	Explain different type of implants.
11.	What is the rationale of Controlled Drug Delivery System?
12.	Explain physicochemical properties of drug relevant to controlled release formulations.
13.	Discuss applications of polymers in Controlled Drug Delivery System.

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07/7/22

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**** Section C consists of Nine questions carrying 5 marks each (Short Answer); attempt any **SEVEN**.*

Section A (10 X2 = 20)

1. Give very short answers to the followings (2 marks each):

i.	State application of polymers in formulation of controlled release drug delivery systems.
ii.	What is the need of mucoadhesive system? Give their advantages.
iii.	Write the principles and advantages of implants.
iv.	Distinguish between microcapsules and microspheres.
v.	Discuss advantages of nasal and pulmonary drug delivery system.
vi.	Describe advantages of drug targeting and suitable examples of diseases for which drug targeting is required.
vii.	Summarize various applications for gastroretentive drug delivery systems.
viii.	Give advantages and disadvantages of Occuserts.
ix.	Classify the polymers with examples on the basis of their structure.
x.	Write the qualities of drug suitable for sustained drug release dosage form.

Section B (2 X 10 = 20)

2.	Explain the physicochemical and biological properties of drugs relevant to controlled release formulations.
3.	Write the principle of in the formulation of altered density system. Mention their formulation, evaluation and applications.
4.	Illustrate the principal, advantage, disadvantage and method of preparation of niosomal drug delivery systems.

Section C (7 X 5 = 35)

5.	Propose the concept and principles of bioadhesion or mucoadhesion.
6.	Discuss the role of penetration enhancers in transdermal drug delivery system. Give examples of penetration enhancers.
7.	Explain various methods and concepts to overcome the intra-occular delivery of drugs.
8.	Write advantage, disadvantage and applications of IUD's.
9.	Discuss the role of monoclonal antibodies in targeted drug delivery.
10.	Describe the various evaluation parameters of transdermal patches.
11.	Explain the principle of osmotic drug delivery system.
12.	Compare biocompatible and biodegradable polymers. Give two examples of each.
13.	Explain the various factors affecting permeation.

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**** Section C consists of Nine questions carrying 5 marks each (Short Answer); attempt any **SEVEN**.*

Section- A (10X2=20)

1.	Give very short answers to the followings:
i.	What are different pharmaceutical applications of osmotic pump?
ii.	Define dry powder inhalers.
iii.	Differentiate between microspheres and microcapsules.
iv.	Enlist application of monoclonal antibodies.
v.	Write advantages and disadvantages of IUDs.
vi.	What is concept of targeted drug delivery system?
vii.	What are ion exchange resins?
viii.	Define matrix and reservoir system.
ix.	Write ideal properties of implant.
x.	Write concept of mucoadhesion.

Section- B (2X10=20)

2.	What are selection criteria of drug to be developed as sustained and controlled drug delivery dosage forms?
3.	Explain different approaches to enhance percutaneous absorption of drugs.
4.	Explain briefly different types of gastroretentive drug delivery system with examples.

Section- C (7X5=35)

5.	Discuss merits and demerits of nanoparticles.
6.	Write down the application of polymers in the formulation of controlled drug delivery.
7.	Write a brief note on liposomes.
8.	Discuss the various approaches used in development of implantable drug delivery systems.
9.	Write a note on development and application of intrauterine device.
10.	Describe the mechanism of percutaneous absorption.
11.	Discuss the nanoparticles with their application.
12.	Write detail about intra ocular barriers and methods to overcome them.
13.	Compare merits and demerits of various pulmonary drug delivery devices.

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16 JUN 2023

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****Section C consists of Nine questions carrying 5 marks each (Short Answer); attempt any **SEVEN**.*

Section- A (10 X2 = 20)

1.	Give very short answers to the followings-
i.	What are the criteria followed to select polymers for Controlled release drug delivery systems.
ii.	Enlist the components of drug targeting.
iii.	Mention the drug release mechanisms in implants.
iv.	What are the types of niosomes?
v.	Write applications of intrauterine drug delivery system.
vi.	Enlist various methods of microencapsulation.
vii.	Name two polymers used as a backing layer in Transdermal drug delivery system.
viii.	Write approaches to overcome ocular delivery of drug.
ix.	Describe the role of saliva and mucus in mucosal drug delivery.
x.	Differentiate between microspheres and microcapsules.

Section- B (2 X 10 = 20)

2.	Describe the various physicochemical and biological factors to be considered in selection of a drug candidate for controlled drug delivery formulations.
3.	Explain in detail about various types of osmotic pumps.
4.	Different formulation approaches of transdermal drug delivery system.

Section- C (7 X 5 = 35)

5.	Discuss the excipients used for nasal spray formulation?
6.	Write about reservoir and matrix type of controlled release formulations.
7.	Explain gastro- retentive drug delivery system and their applications.
8.	Discuss briefly about intrauterine drug delivery systems (IDU).
9.	Describe the monoclonal antibodies with its applications.
10.	Write the coacervation-phase separation technique in micro encapsulation.
11.	Enlist the chemical enhancers in transdermal drug delivery.
12.	Describe the basic components in the buccal drug delivery system.
13.	Describe the methods used in liposome preparation.

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061223 (Evening)

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**** Section C consists of nine questions carrying 5 marks each (Short Answer); attempt any **SEVEN**.*

Section A (10 X2 = 20)

1.	Give very short answers to the following:
i.	What is GRDDS?
ii.	Define the HBS system.
iii.	Write advantages of Implants.
iv.	Differentiate between Liposomes and niosomes.
v.	What is the concept of the diffusion-controlled system?
vi.	Define Ocuserts.
vii.	Define the term micro-particles with suitable examples.
viii.	Enlist the various factors which affect the permeation through the skin.
ix.	What are buccal patches?
x.	Define Monoclonal antibodies.

Section B (2 X 10 = 20)

2.	Write down the physicochemical and biological properties of drugs relevant to controlled release formulation.
3.	Give a descriptive note on the basic components of TDDS.
4.	Define the microencapsulation. Discuss in detail the coacervation phase separation method of microencapsulation.

Section C (7 X 5 = 35)

5.	Explain intra-ocular barriers and the methods to overcome them.
6.	Give in detail principles of bio-adhesion and formulation considerations of buccal drug delivery systems.
7.	Explain the term liposomes and its applications in detail.
8.	Write in detail about Intrauterine devices.
9.	Describe the formulation of inhalers.
10.	Discuss the various approaches used in the development of implantable drug delivery systems.
11.	Explain the various approaches to design a controlled drug delivery system.
12.	Write about anatomy of skin with a well-labelled diagram..
13.	Write a note on contact lenses.

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(Evening)
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****Section C consists of Nine questions carrying 5 marks each (Short Answer); attempt any **SEVEN**.*

Section- A **(10 X2 = 20)**

1.	Give a very short answers to the followings:
i.	Enlist advantages of implantable drug delivery system.
ii.	What are the stages in mucoadhesion?
iii.	Write the general mechanisms of drug release from polymers.
iv.	Write applications of intrauterine drug delivery system.
v.	What are the criteria followed in polymer selection in controlled drug delivery systems?
vi.	Enlist excipients used in nasal spray formulations.
vii.	Write polymers used as a backing layer in Transdermal drug delivery.
viii.	Write a note on matrix diffusion system.
ix.	State advantages of ocuserts.
x.	What are the strategies of drug targeting?

Section- B **(2 X 10 = 20)**

2.	Describe formulation of ocular drug delivery systems.
3.	Define Transdermal drug delivery system (TDDS). Give advantages and disadvantages. Describe permeation enhancer with examples.
4.	Explain in detail of implantable drug delivery system and their drug release mechanisms.

Section- C **(7 X 5 = 35)**

5.	What are the advantages of copper intrauterine devices?
6.	Write the solvent extraction and solvent evaporation methods to prepare microspheres.
7.	Describe Ion Exchange Resins based controlled release formulation.
8.	Explain the theories of mucoadhesion.
9.	Discuss strategies and components of targeted drug delivery systems.
10.	Describe the monoclonal antibodies with its applications.
11.	Write applications of transdermal drug delivery system.
12.	Write advantages and disadvantages of nebulizer.
13.	Write about controlled-release polymers and their applications.

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(Morning)
26 1 24

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***Section B consists of Three questions carrying 10 marks each (Long Answer); attempt any **TWO**.*

****Section C consists of Nine questions carrying 5 marks each (Short Answer); attempt any **SEVEN**.*

Section- A (10X2=20)

1.	Give very short answers to the followings:
i.	What are the ideal requirements for ocular drug delivery systems?
ii.	What are the types of niosomes?
iii.	Write the differences between biodegradable and biocompatible polymers with examples.
iv.	What is the need for mucoadhesive system? Mention their advantage.
v.	Mention the drug release mechanisms in implants?
vi.	What are the ideal requirements for ocular drug delivery systems? Define OCUSERT.
vii.	What are the factors affecting gastric retention in gastroretentive drug delivery.
viii.	Enlist excipients used in Nasal Spray formulations.
ix.	Write differences between liposomes and nanoparticles
x.	Write applications of intrauterine drug delivery system.

Section- B (2X10=20)

2.	Explain in detail about various types of osmotic pumps.
3.	Explain different formulation approaches of Transdermal drug delivery system.
4.	Define physicochemical and biological factors for controlled release formulations.

Section- C (7X5=35)

5.	Explain implantable drug delivery system (Alzet and DUROS), and include diagrams.
6.	Write the approaches of controlled drug delivery systems.
7.	Describe phase separation techniques (any two) to prepare microcapsules.
8.	Describe the role of Monoclonal Antibodies in drug targeting.
9.	Write various approaches to overcome ocular barriers to drug delivery.
10.	What are gastroretentive drug delivery systems? Explain various approaches of gastroretentive drug delivery system.
11.	Define liposomes. Explain the different methods of preparation of liposomes.
12.	Write in details about dry powder inhalers.
13.	Propose the concept and principles of bioadhesion or mucoadhesion.

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21 06 25
(Evening)

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Section- A** *consists of* ***ten questions*, each carrying 2* ***marks*** *(Very Short Answer Type);* ***Attempt all.***
****Section- B** *consists of* ***three questions****, each carrying* ***10 marks*** *(Long Answer Type);* ***Attempt any two.***
****Section- C* ***consists of*** *nine questions,* ***each carrying*** *5 marks* ***(Short Answer Type);*** *Attempt any seven.*

Section- A **(10X2=20)**

1.	Give very short answers to the followings:
i.	Define controlled drug delivery systems.
ii.	How are polymers used in drug delivery? Give one example.
iii.	Define the term microencapsulation techniques.
iv.	How does a mucosal drug delivery system work?
v.	Write the name of basic components used in transdermal drug delivery system.
vi.	Mention the significance of the gastroretentive drug delivery system.
vii.	Define active targeting drug delivery system.
viii.	Write the classification of size of liposome.
ix.	What is ocular drug delivery system?
x.	State the application of intrauterine drug delivery systems.

Section- B **(2X10=20)**

2.	Explain in detail the different approaches used in designing controlled release formulations.
3.	Describe in detail the advantages, disadvantages, and various approaches involved in gastroretentive drug delivery systems.
4.	What is a targeted drug delivery system? Elaborate on its concept and the different approaches used in targeted drug delivery.

Section- C **(7X5=35)**

5.	Outline any two methods for the preparation of liposomes.
6.	Present the concept and principles of bioadhesion/mucoadhesion.
7.	List the applications of the transdermal drug delivery system.
8.	Summarize controlled-release polymers and their applications.
9.	Provide a detailed overview of intrauterine devices.
10.	Highlight the role of monoclonal antibodies in drug targeting.
11.	Examine intraocular barriers and methods used to overcome them.
12.	Write about the coacervation-phase separation technique used in microencapsulation.
13.	Mention the advantages and disadvantages of a nebulizer.

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(evening)
17 12 25

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****Section -C consists of Nine questions carrying 5 marks each (Short Answer); attempt any SEVEN.*

Section- A **(10X2=20)**

1.	Give very short answers to the followings:
i.	Write the limitations of controlled drug delivery systems.
ii.	Mention the applications of nasal drug delivery system.
iii.	Differentiate diffusion and dissolution type controlled drug delivery systems.
iv.	Mention on coacervation phase separation technique.
v.	Write the applications of monoclonal antibodies.
vi.	Mention the merits and demerits of buccal drug delivery system.
vii.	Enlist the ideal drug candidate for gastro-retentive drug delivery system.
viii.	Name any two categories of inhalers with examples.
ix.	Mention the importance of cross linking gent in polymers.
x.	Write the applications of osmotic pump.

Section- B **(2X10=20)**

2.	Explain the concepts and various approaches for targeted drug delivery systems with suitable examples.
3.	Write in detail about intraocular barrier and methods to overcome in ocular drug delivery system.
4.	Explain the principle and theories of bioadhesion. Explain transmucosal permeation.

Section- C **(7X5=35)**

5.	Explain on permeation enhancers with suitable examples
6.	Explain the concept of mucosal drug delivery systems
7.	Discuss the ideal formulation consideration of buccal patches
8.	Explain the need for drug targeting
9.	Write a note on role of polymers in drug delivery.
10.	Outline the need for pulmonary drug delivery system
11.	Write the application of intrauterine drug delivery systems.
12.	Write the advantages and disadvantages of niosomes.
13.	Explain the rationale of selecting drug candidates for controlled drug delivery.

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