

Duration: 3 Hours

Total marks: 75

- N.B.:** 1. All questions are compulsory  
2. Figures to the right indicate full marks.

Question No.	Question	Max. Marks
<b>Q.I</b>	<b>Multiple Choice Questions (Answer all of the following):</b>	<b>20</b>
1	The physicochemical factor to be considered in selection of a drug candidate to be formulated as a sustained release drug delivery system is:	1
	a) partition coefficient	
	b) half-life	
	c) absorption	
	d) distribution	
2	The following equation under sink condition depicts the importance of drug solubility in the context of drug release from solute particles:	1
	a) Higuchi equation	
	b) Noyes-Whitney equation	
	c) Fick's law	
	d) Dalton's law	
3	A polymer used in dissolution controlled release formulations is	1
	a) Ethylcellulose	
	b) Polyethylene	
	c) Polyvinyl pyrrolidone	
	d) Polyurethane	
4	A feature of synthetic polymers is	1
	a) Polymer properties cannot be controlled	
	b) Large scale production is difficult	
	c) Low immunogenicity	
	d) Degradation rate can be controlled	
5	Following is the method used for preparation of microcapsules:	1
	a) Multiorifice centrifugal technique	
	b) Shaking method	
	c) Reverse Phase evaporation	
	d) Freeze drying method	
6	Bitter taste of the drug can be avoided by forming	1
	a) Microcapsules	
	b) Niosomes	
	c) Liposomes	
	d) Aquasomes	

- 7 The most common route for drug permeation through the buccal mucosa is by \_\_\_\_\_ pathway **1**
- a) Carrier mediated
  - b) Intracellular
  - c) Precellular
  - d) Pinocytosis
- 8 Chitosan is a \_\_\_\_\_ mucoadhesive polymer. **1**
- a) Cationic
  - b) Anionic
  - c) Synthetic
  - d) Non-ionic
- 9 Osmotic drug delivery systems have the following characteristic: **1**
- a) have a membrane that is soluble at intestinal pH
  - b) the membrane is impermeable to GI fluids
  - c) the membrane is permeable to water
  - d) the membrane must swell
- 10 Copper-T is a following type of implant: **1**
- a) Intra-uterine
  - b) Buccal
  - c) Osmotic-pump based
  - d) Ocular
- 11 An advantage of the transdermal route is: **1**
- a) used only for hydrophilic drugs
  - b) prevents first pass metabolism
  - c) used for drugs with high doses
  - d) produces high levels of drug in plasma
- 12 A backing used for transdermal patches is **1**
- a) Methyl cellulose
  - b) Polyacrylate
  - c) Polyisobutylene
  - d) Polyethylene terephthalate
- 13 Factors affecting floating of a GRDDS include all, except **1**
- a) Size
  - b) Posture
  - c) Buoyancy
  - d) Volume of fluid
- 14 Alginate beads for gastroretention are prepared using **1**
- a) alginic acid and calcium sulphate
  - b) magnesium sulphate and sodium alginate
  - c) alginic acid and sodium chloride
  - d) sodium alginate and calcium chloride

- 15 Pulmonary drug delivery system based on use of piezoelectric crystal is characteristic of one of the following: **1**
- Ultrasonic nebulizer
  - Jet nebulizer
  - Aerosol
  - MDI
- 16 Oropharynx is a part of **1**
- Left Lung
  - Nasal Region
  - Right lung
  - Tracheal Region
- 17 Which scientist gave the concept of “The Magic Bullet”? **1**
- Paul Ehrlich
  - Arthur Noyes
  - Willis Whitney
  - Gordon Amidon
- 18 Lecithins are also called: **1**
- Phosphatidyl serine
  - Phosphatidyl choline
  - Phosphatidyl inositol
  - Phosphatidyl ethanolamine
- 19 In Ocusert the two outer layers of EVA enclosing the inner core of drug gelled with polymer plays the following role: **1**
- helps in handling and inserting the system
  - acts as drug reservoir
  - acts as a rate controlling membrane
  - helps in absorption of lachrymal fluid
- 20 The polymer used to construct a Soluble Ocular Drug Insert is designated as: **1**
- PVA
  - HPMC
  - CAP
  - ABE
- QII Answer any Two questions of the following: 20**
- 1 Elaborate in detail on the physicochemical properties of API related to design of controlled release formulations. 10**
- 2 State the various advantages and applications of microencapsulation. Explain fluidized bed coating process for microencapsulation. 10**
- 3 Provide the rationale for design of ocular inserts. Elaborate in detail on Ocusert. 10**

- QIII Answer any Seven questions of the following: 35**
- 1** Give a brief account of controlled release formulations based on the principle of ion-exchange. **5**
  - 2** Write a note on the types of polymers used for controlled release drug delivery systems. **5**
  - 3** Enlist various tests for evaluation of the mucoadhesive strength of a mucoadhesive drug delivery system. Write in detail about any two of them. **5**
  - 4** Discuss the formulation of Dry Powder Inhalers. **5**
  - 5** Briefly describe the various medicated and non-medicated intra-uterine devices. **5**
  - 6** Describe the membrane permeation controlled systems for transdermal delivery of drugs. **5**
  - 7** Explain the need to modulate gastric residence time of drugs. Elaborate on the various approaches to do so. **5**
  - 8** Elaborate on the solvent evaporation method for preparation of liposomes. **5**
  - 9** Write a short note on New Ophthalmic Delivery system. **5**

\*\*\*\*\*