

# Question Paper

Exam Date & Time: 03-Jan-2024 (02:00 PM - 05:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

Novel Drug Delivery Systems [PCE-BP704T - S2]

Marks: 75

Duration: 180 mins.

### I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

1) The dose accuracy of the metered dose inhalers is dependent on: (1)

- [surface tension, and viscosity of the formulation](#)
- [contact angle and surface tension of the formulation](#)
- [contact angle and viscosity of the formulation](#)
- [velocity, contact angle, and surface tension of the formulation](#)

2) Carbenozolone are the \_\_\_\_\_, used as permeation enhancers to enhance intranasal drug delivery. (1)

- [cyclodextrins](#)
- [chelators](#)
- [Glycyrrhetic acid derivates](#)
- [bile salts](#)

3) Fusidic acid derivatives (STDHF) are the \_\_\_\_\_, used as permeation enhancers to enhance intranasal drug delivery. (1)

- [chelators](#)
- [glycols](#)
- [Glycyrrhetic acid derivates](#)
- [bile salts](#)

4) The polymers that can be used for the preparation of microspheres to enhance absorption and bioavailability by adhering to the nasal mucosa: (1)

- [dextran, chitosan, and biodegradable starch](#)
- [sodium alginate, biodegradable starch, chitosan](#)
- [dextran, calcium alginate, and chitosan](#)
- [agarose, polyvinyl alcohol, and biodegradable starch](#)

5) Gel forming mucins are secreted by: (1)

- [cilia cells](#)

[mucociliary cells](#)

[goblet cells](#)

[epithelium cells](#)

- 6) Most of the water molecules from the drug formulations are taken up by the: (1)

[Keratin in corneocytes](#)

[Desmosomes in corneocytes](#)

[Keratohyalin granules](#)

[lamellar body of the stratum granulosum](#)

- 7) Generally, the packaging density of the lipid lamellar arrangement decreases in the order of: (1)

[Orthorhombic > Hexagonal > Liquid](#)

[Hexagonal > Liquid > Orthorhombic](#)

[Liquid < Orthorhombic < Hexagonal](#)

[Orthorhombic < Hexagonal <](#)

[Liquid.](#)

- 8) Increased drug portioning across the skin membrane can be achieved: (1)

[increasing the drug concentration in the formulation.](#)

[increasing the thickness of the membrane](#)

[increasing the drug's flux](#)

[decreasing the diffusion coefficient of the drug](#)

- 9) Pressure-sensitive adhesives works on the principle of: (1)

[cohesive force.](#)

[adhesive force.](#)

[formation of adhesive bonds.](#)

[all the above.](#)

- 10) Polyester foil and metalized laminate are used as: (1)

[backing laminate](#)

[release liner](#)

[permeation enhancer](#)

[pressure-sensitive adhesives](#)

- 11) Which of these is true for mucoadhesive drug delivery systems? (1)

[Bypasses the pre-systemic metabolism](#)

[Lower enzymatic activity than oral route](#)

[Non-invasive drug delivery](#)

[All of the above](#)

- 12) Mucus has which of the following? (1)

- [Lipids](#)
- [Mineral salts](#)
- [Free protein](#)
- [All of the above](#)

13) Osmotic drug delivery systems \_\_\_\_ (1)

- [have no membrane](#)
- [have two membranes](#)
- [have a membrane permeable to water](#)
- [Have three membranes](#)

14) \_\_\_\_ is used in colonic targeted systems (1)

- [Enteric polymer](#)
- [Non-enteric polymer](#)
- [None of the above](#)
- [Polymer that dissolves at low pH](#)

15) Ionotropic gelation can be used for preparation of \_\_\_\_ (1)

- [Microparticles](#)
- [Nanoparticles](#)
- [Both microparticles and nanoparticles](#)
- [Neither microparticles nor nanoparticles](#)

16) Progestasert releases \_\_\_\_ (1)

- [progesterone](#)
- [paracetamol](#)
- [aspirin](#)
- [phenobarbital](#)

17) In multi-component membrane controlled reservoir type IUDs zero order drug release occurs till drug suspension turns \_\_\_\_ (1)

- [insoluble](#)
- [precipitated](#)
- [saturated](#)
- [unsaturated](#)

18) Intrauterine implants are considered which generation of IUDs? (1)

- [Second](#)
- [Third](#)
- [Fourth](#)
- [Fifth](#)

19) Interfacial polymerization is a \_\_\_\_ method of microencapsulation (1)

[Chemical](#)  
[Physical](#)  
[Physico-chemical](#)  
[Physico-mechanical](#)

20) The drawback of only copper-based IUDs was \_\_\_\_\_ (1)

[menorrhagia](#)  
[amenorrhea](#)  
[unwanted contraception](#)  
[spermicidal effect](#)

### II Long Answers

Answer all the questions.

- 1) Classify biodegradable polymers with two examples for each class. Discuss the properties and applications of any two non-biodegradable polymers. (10)
- 2) Describe targeted drug delivery systems (10)

### III Short Answers

Answer all the questions.

- 1) Write the advantages of SYNTHETIC biodegradable POLYMERS. Discuss the properties of any two synthetic biodegradable polymers. (5)
- 2) Discuss cornea, and sclera as a rate limiting barrier for ocular drug delivery (5)
- 3) Define intranasal drug delivery system. Discuss the physicochemical properties of the drug influencing nasal drug absorption (5)
- 4) State the difference between inflatable and intragastric-osmotically controlled GRDDS with the help of suitable diagram (5)
- 5) Describe implantable drug delivery systems (5)
- 6) What are niosomes? (5)
- 7) What are liposomes? (5)

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