Exam Date & Time: 06-Dec-2022 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

Novel Drug Delivery Systems [PCE-BP704T]

Marks: 75 **Duration: 180 mins.**

I Multiple Choice Questions (MCQs)

Answer all the questions. Section Duration: 30 mins

1) Which of the following is a type of chemical microencapsulation technique? (1)

1)	Air suspension		2)	Centrifugal extrusion		3)	Coacervation		4)	Polymerization	

2) Extended release of a drug can be achieved using (choose the correct one of the following) (1)

1)	sustained release DDS only		2)	controlled release DDS only		3)	sustained or controlled release DDS		4)	slightly modified immediate release DDS	

3) Controlled release systems aim to control the plasma concentration of the drug after administration by (1)

1)	intra venous route		2)	oral route		3)	various possible routes		4)	nasal route	

4) Delayed-release dosage forms can be defined as systems which are formulated to release the active ingredient at a time other than immediately after administration. (1)

1)	False		2)	True		3)	Somewhat false		4)	Somewhat true	

5) The role of the drug delivery systems is to allow the (1)

1)	effective, safe and reliable application of the drug to the patient		2)	safe and reliable application of the drug to the patient		3)	effective and reliable application of the drug to the patient		4)	safe and effective application of the drug to the patient	

6) Several types of Gastroretentive systems have been developed, which can be (identify the wrong one) (1)

1)	floating systems		2)	high-density systems		3)	expandable systems		4)	enteric coated systems	

7) Glyceryl stearate belongs to which types of microcapsules coating materials? (1)

1)	Water soluble resin		2)	Water insoluble resin		3)	Wax and lipid resin		4)	Enteric coating resin	

8) Following are the merits of spray drying technique of microencapsulation EXCEPT (1)

1)	Produces microparticles with the size range of 10 to 300 µ	2)	Well established and easy to scale up	3)	Large scale production is possible	4)	Gives polydispersed pattern of particles

9) Which type of delivery system follows swellable mechanism? (1)

1)	Vapour pressure activated drug delivery system	2)	Osmotic pressure activated drug delivery system	3)	Magnetically activated drug delivery system	4)	Hydration activated drug delivery system

10) In osmotic pump the release rate is dependent on the following EXCEPT (1)

1)	Solubility of osmogene	2)	Osmotic gradient	3)	Water permeability of semipermeable membrane	4)	Drug encapsulation

11) Following are the advantages of implantable drug delivery systems EXCEPT. (1)

1)	Plasma drug levels can be maintained at steady state	2)	Provides release for few weeks	3)	Controlled drug release at the specific site of action	4)	Termination of release is possible with microsurgery

12) Following are the advantages of transdermal drug delivery systems EXCEPT (1)

1)	Avoids hepatic first-pass metabolism	2)	Preferred for less dose	3)	It can be given in unconscious condition	4)	Relatively large area of application

13) Which of the following statements is correct? (1)

1)	Steroid hormones, chemical carcinogens and some drugs are metabolized by the skin	2)	Skin thickness and density of skin appendages does not produce any effect on delivery of drugs through transdermal drug delivery systems	3)	One of the most important factors in decreasing the penetration rate of most substances is hydration of stratum corneum	4)	Diffusion coefficient decrease with decrease in temperature

The preferred half-life of drugs for transdermal drug delivery systems is .....

1)	Less than 2 h		2)	Between 2 to 4 h		3)	Between 4 to 6 h	4)	More than 6 h

(1)

15) In reservoir systems, the drug is present in the core (reservoir) of the dosage form and is surrounded by (indicate the wrong one)

1)	an inert polymer film		2)	a non-inert polymer film		3)	thin polymer film	4)	thick polymer film

(1)

16) To avoid recognition and removal of particulate DDS from the systemic circulation the particles should be formulated

1)	and have a hydrophilic surface		2)	to be less than 100 nm in size		3)	to be less than 100 nm in size and have a hydrophobic surface	4)	to be less than 100 nm in size and have a hydrophilic surface

(1)

17) Indicate which one of the following statements is not correct

1)	Depending on the physiology of the target, some drug targeting system may naturally accumulate at the target site		2)	Some drug targeting systems may be actively targeted to a site using a target-specific recognition component		3)	Drug-targeting systems can be understood as homing devices which purposely search out the target	4)	Addition of galactose to a carrier system can promote targeting of galactose receptors on the surface of liver parenchymal cells.

(1)

18) Indicate which one of the following statements is not correct

1)	Increased permeability of the endothelium due to pathological conditions can be exploited to allow the escape of the drug carrier from the central circulation		2)	Due to the leaky vasculature of the tumour site, after intravenous injection particulate carrier systems can become trapped in the tumour vasculature		3)	Tumour tissue generally lacks effective lymphatic drainage	4)	Targeting via the EPR effect is driven by active targeting moieties on the DDS

(1)

19) To facilitate localisation of the Ocusert system in the eye, the delivery system (choose the wrong one of the following) (1)

1)	contain a white titanium dioxide ring		2)	contain a white iron oxide ring		3)	can be used for 4 or 7 days for the treatment of glaucoma		4)	has a release rates of 20 or 40 microgram pilocarpine/hr	

20) Following statements are true for intrauterine devices (IUD) EXCEPT (1)

1)	The pregnancy rate of Cu-T-30 is 5%		2)	Multiload Cu-375 is a third generation IUD		3)	Cu-T-200C retain physical integrity of 15 to 20 years		4)	Levonorgestrel releasing IUD has an effective life of 5 years	

II Long Answers

Answer all the questions.

1) **A)** With suitable diagram explain intra-ocular barriers for passage of drug. How to overcome these barriers for drug delivery? (6 marks)

B) Write briefly on Ocusert (4 marks) (10)

2) What is the need of mucosal drug delivery systems? Explain. Discuss in on theories of bioadhesion. (10)

III Short Answers

Answer all the questions.

1) Classify different gastro-retentive approaches. Explain any two. (5)

2) What are pulmonary drug delivery systems? Discuss. (5)

3) How physicochemical properties can be used for designing controlled DDS? Explain with suitable examples (5)

4) How to achieve colon specific drug delivery? Discuss. (5)

5) What are the differences between Liposomes and Niosomes? Explain with neat diagrams. Write one application for each. (5)

6) Discuss how monoclonal antibody therapies actively target drugs? (5)

7) Write briefly on intrauterine drug delivery devices. (5)

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