

Time: 3 Hours

Marks: 75

Q. 1 Attempt all multiple-choice questions (MCQ)

20M

Sr No	Questions		Options
1	What is the primary purpose of targeting in drug delivery systems?	a	To increase the volume of drug administration
		b	To decrease drug efficacy
		c	To enhance drug specificity and reduce side effects
		d	To prolong drug half life
2	Which targeting strategy involves the use of external stimuli, such as heat or light, to release drugs at specific sites?	a	Active targeting
		b	Passive targeting
		c	Stimuli-responsive targeting
		d	Ligand-targeted delivery
3	Which of the following methods is commonly used to bypass the blood-brain barrier (BBB) for brain-targeted drug delivery?	a	Intramuscular injection
		b	Intravenous injection
		c	Intrathecal injection
		d	Intradermal injection
4	What is the main challenge associated with passive tumor targeting in drug delivery systems?	a	Limited drug specificity
		b	Rapid drug degradation
		c	Inefficient drug release
		d	High cost of production
5	What are Liposomes primarily composed of?	a	Carbohydrates
		b	Lipids
		c	Nucleic acids
		d	Proteins
6	Emulsion polymerization is a method of preparation for:	a	Nanoparticles
		b	Liposomes
		c	Niosomes
		d	Pellets
7	Which of the following is a biodegradable polymer?	a	Poly vinyl chloride
		b	Polypropylene
		c	Poly lactic-co-glycolic acid
		d	Polyethylene

8	P-NMR is used to determine _____ of liposomes	a	Particle size
		b	Drug loading
		c	Solubility
		d	Lamellarity
9	The following method is employed to prepare Niosomes:	a	Ether injection
		b	Interfacial complexation
		c	Spray drying
		d	Emulsion chemical dehydration
10	The following is a polymer of proteins origin natural material:	a	Starch
		b	Gelatin
		c	Agarose
		d	Chitosan
11	The antibody which contains Fc region of human IgG but Fab regions of murine origin is termed as:	a	Humanized antibody
		b	Human antibody
		c	Chimeric antibody
		d	Murine antibody
12	Matrix systems in which the drug is homogeneously dispersed, either dissolved or homogenously suspended are:	a	Nanocapsules
		b	Phytosomes
		c	Aquasomes
		d	Microspheres
13	Following is the factor governed by Aerosol design which affects particle deposition of lungs:	a	Presence of particulates
		b	Lung surface
		c	Impairment of mucociliary clearance
		d	Airway obstructions
14	A nebulizer operating on the principle of rupturing a thin film of water by gas and producing a continuous dispersion of fine liquid particles is termed as:	a	Jet nebulizer
		b	Hydrodynamic nebulizer
		c	Ultrasonic nebulizer
		d	Electric nebulizer

15	Following is the factor related to physiological aspect affecting the pharmacokinetics and bioavailability of intranasal administration:	a	concentration of active drug
		b	volume administered
		c	presence of infection
		d	molarity of formulation
16	Following is the bile salt used as permeation enhancer for intranasal delivery:	a	glycyrrhizinate
		b	citric acid
		c	lauric acid
		d	deoxycholate
17	Which of the following is a common vector used in gene delivery systems?	a	Antibodies
		b	Enzymes
		c	Viruses
		d	Lipids
18	What is the primary advantage of liposomal gene delivery systems?	a	High immunogenicity
		b	Limited cargo capacity
		c	Enhanced stability and protection of genetic material
		d	Inability to target specific cell types
19	The translation phase of protein production is interrupted by:	a	Aptamers
		b	Antisense molecules
		c	Aquasomes
		d	Lipoplexes
20	Identify the property of Aptamers:	a	They can be deactivated
		b	They are non-specific
		c	They are polysaccharides
		d	They cannot be modified

Q.2: Attempt any two out of three (20 M)

- i) a Explain the concept of ligand-receptor interaction in targeted drug delivery. Provide an example of a ligand-receptor pair used in drug targeting and their application. **5M**
- b Discuss any two strategies to overcome the blood-brain barrier (BBB) for drug delivery to the central nervous system. **5M**
- ii) a Give the advantages and disadvantages of Liposomes. Discuss two methods for manufacturing of liposomes. **5M**
- b Write a note on any two polymers used in design of nanoparticles **5M**
- iii) a Enlist the characterization methods for microspheres and discuss in detail any one of it. **5M**
- b Elaborate on the method of preparation of microspheres based on Phase Separation Coacervation Technique. **5M**

Q.3: Attempt any seven out of nine (35 M)

- i) Explain the significance of EPR effect in tumor targeting. **5M**
- ii) Describe any two methods for manufacture of nanoparticles. **5M**
- iii) Explain any two pharmaceutical applications of monoclonal antibodies. **5M**
- iv) Summarize in brief on Aquasomes as a drug delivery system. **5M**
- v) Discuss *ex vivo* nasal perfusion model and mention any one application of same. **5M**
- vi) Discuss any three mechanisms of aerosol deposition involved in nasapulmonary drug delivery. **5M**
- vii) Explain in brief the process of *ex vivo* gene delivery. **5M**
- viii) Describe any two viral vector-based gene delivery systems. **5M**
- ix) Elaborate in detail on significance of Antisense therapy. **5M**

\*\*\*\*\*