

Time: 3 Hrs

Marks: 75

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

20M

Sr No	Questions	Options
1	The body's natural immune system is used in which type of targeting	a Passive
		b Active
		c Dual
		d Physical
2	The lymph is involved in following important function	a Transport oxygen to the blood
		b Transport carbon-dioxide to the lungs
		c Return RBCs to lymph nodes
		d Return interstitial fluid to the blood
3	Immunoglobulin clusters on the surface of the target cells expose tail region which is recognized by _____ receptors present on macrophages.	a Interferon
		b Fc
		c Antibodies
		d lectins
4	In case of cancer cells, there is _____ expression of cell surface receptors as normal cells.	a over
		b similar
		c reduced
		d unaffected
5	A lipid bilayer structure that encloses an internal aqueous volume	a Niosomes
		b Liposomes
		c Solid Lipid Nanoparticle
		d Nanoparticle
6	LDC stands for _____ in nanoparticle technology	a Lipid Drug Conjugates
		b Lyophobic Drug Complex
		c Lyophilic Drug Complex
		d Lipid Drug Concentration

7	For the preparation of _____ ether injection method is used	a	Monoclonal antibodies
		b	Nanoparticles
		c	Transfersomes
		d	Liposomes
8	Which of the following is a natural polymer used in nanoparticles	a	PLGA
		b	Polycaprolactone
		c	Alginates
		d	Polystyrene
9	The following polymerization technique for preparation of microspheres is also referred as bead or pearl polymerization	a	Bulk polymerization
		b	Emulsion polymerization
		c	Suspension polymerization
		d	Interfacial polymerization
10	The following is a non-biodegradable polymer used in the preparation of microspheres	a	Glycidyl methacrylate
		b	Polyalkyl cyano acrylates
		c	Polyanhydrides
		d	Lactides and glycolides and their copolymers
11	Non-ionic surfactant based vesicles are _____	a	Liposomes
		b	Microspheres
		c	Niosomes
		d	Microcapsules
12	The following technique employs chemical cross-linking agents during preparation of microspheres of natural polymers	a	Spray drying
		b	Spray congealing
		c	Solvent extraction
		d	Single emulsion technique
13	_____ attached assists patients in coordination with the MDI and can reduce undesirable oropharyngeal deposition.	a	Spacer mouthpiece
		b	Metering chamber
		c	Actuator
		d	Metering valve

14	In _____ mechanism of aerosol deposition, greater the mass, particle mobility and initial velocity will have increased chances of hitting the obstacle in front of it.	a	Inertial impaction
		b	Sedimentation
		c	Electrostatic precipitation
		d	Diffusion
15	The _____ employs packaging consisting of individual doses of a drug in blister packs on a circular cassette	a	Diskhaler
		b	Spinhaler
		c	Rotahaler
		d	Easyhaler
16	The following factors of dosage form affect the pharmacokinetics and bioavailability of drugs following intranasal administration except	a	physicochemical properties of excipients
		b	toxicity of dosage form
		c	concentration of active drug
		d	speed of mucus flow
17	Identify the chemical method to enhance delivery in gene transfer	a	Sonoporation
		b	Magnetofection
		c	Lipoplexes
		d	Microinjections
18	A commonly used vector in gene therapy to carry target gene into host cells is	a	Bacteria
		b	Fungi
		c	Eukaryotic cells
		d	Virus
19	All of the following are true about Aptamers except	a	they are oligonucleotides
		b	they can be deactivated
		c	they are non-specific
		d	they can be modified
20	_____ are the backbone of antisense therapy	a	Nucleic acids
		b	Lipids
		c	Carbohydrates
		d	Proteins

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

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| i) | a | Explain rationale for target oriented drug delivery system and state the advantages of such type of system. | 5M |
| | b | Enlist approaches for tumor targeting and explain the "Enhanced Permeability and Retention" effect. | 5M |
| ii) | a | What are nanoparticles. Explain in detail evaluation of nanoparticles. | 5M |
| | b | Classify Liposomes. Discuss any two methods for the preparation of liposomes. | 5M |
| iii) | a | Give a detailed account of nebulizers. | 5M |
| | b | Summarize any three factors affecting absorption of intranasal drug delivery systems. | 5M |

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

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| i) | Discuss in detail the factors affecting targeted drug delivery systems. | 5M |
| ii) | List out the methods of characterization of microspheres and explain any one method in detail. | 5M |
| iii) | List out the methods of preparation of niosomes and explain any one method in detail. | 5M |
| iv) | Write in brief on any two pharmaceutical applications of monoclonal antibodies. | 5M |
| v) | Write a short note on <i>ex vivo</i> nasal perfusion model and mention any one application of same. | 5M |
| vi) | Summarize any three factors governing particle deposition in lungs governed by aerosol design. | 5M |
| vii) | Elaborate on the concept and applications of Aptamers. | 5M |
| viii) | How do antisense oligonucleotides act? Discuss any two applications of Antisense therapy. | 5M |
| ix) | State the meaning of somatic gene therapy and discuss any one approach for the same. | 5M |
