

BPH_E_811_T – Novel Drug Delivery Systems
Multiple Choice Questions

1 A limitation of novel drug delivery system

Burst Effect
Use of conventional routes
Target specificity
Low dose of drug

2 Poly(ϵ -caprolactone) is a _____ polymer

natural biodegradable
cellulosic
synthetic biodegradable
hydrophilic

3 Polyorthoesters release the drug by _____

surface erosion
dissolution
diffusion
swelling

4 An example of a polymer incorporated into dendrimers is

Polyethyleneimine
Propylene glycol
Polyurethane
Polystyrene

5 Stealth nanoparticles _____

are surface modified nanoparticles

have low circulatory half life
rapidly taken up by RES
not as effective as nanoparticles

6 Select a suitable approach for gastro retention

Floating
Emulsification
Nanonization
Direct compression

7 An osmotic pump that does not require a delivery orifice_____

controlled porosity osmotic pump
push pull osmotic pump
elementary osmotic pump
sandwich osmotic pump

8 High speed homogenization and atomization of feed into a stream
of hot air is associated with _____

spray Drying
centrifugal extrusion
spray congealing
multiorifice centrifugal technique

9 Pilo-40 delivers drug at a rate of _____

40 $\mu\text{g}/\text{h}$ for 3 days
40 $\mu\text{g}/\text{h}$ for 7 days
40 mg/h for 7 days
40 mg/h for 3 days

10 Which of these polymers are ion sensitive in nature?

Xyloglucan
Pluronic
Carbopol
Pectin

11 _____thousands of unleachable, microscopic spheres of drug reservoirs dispersed in a lipophilic polymer

Reservoir type of TDDS
Matrix type of TDDS
Microreservoir type of TDDS
Drug in adhesive type of TDDS

12 A transdermal patch with PII of less than 2 is_____

non-irritant
slightly irritant
moderately irritant
severely irritant

13 Absorption by transmucosal routes is_____

paracellular
endocytosis
both paracellular and transcellular
pinocytosis

14 A backing material for unidirectional release of a buccal formulation is _____

PEG 400
Hydroxy propyl methyl cellulose
Ethyl cellulose
Sodium carboxy methyl celluloidse

15 A biocompatibility test that estimates potential harmful effects of single or multiple exposure of the implant during a period of less than 24 hours is known as _____

sucacute toxicity
acute toxicity study
subchronic toxicity study
chronic toxicity study

16 Nandrolone decanoate in oleaginous solution is an example of _____

esterification type depot formulation
encapsulation type depot formulation
dissolution type depot formulation
adsorption type depot formulation

17 The _____ offers a direct pathway to the brain.

olfactory mucosa or superior turbinate
nasal vestibule
middle turbinate
inferior turbinate

18 What does aerodynamic diameter of inhaled drug indicate?

predicts where in the respiratory tract such particles deposit
predicts residence time of the inhaled dosage form
predicts dose per actuation of the inhaled dosage form
predicts efficacy of the inhaled dosage form

19 A catalyzed pathway across the brain.

ion-pair
pinocytosis
lipid mediated
receptor mediated

20 A factor affecting lymphatic uptake.

Larger aqueous phase
Greater hydrophilicity of nanoparticles
Low concentration of surfactant
Longer chain length of lipid

Answer Key

MCQ NO Correct option

- 1 Burst Effect
- 2 synthetic biodegradable
- 3 surface erosion
- 4 Polyethyleneimine
- 5 are surface modified nanoparticles
- 6 Floating
- 7 controlled porosity osmotic pump
- 8 spray Drying

- 9 40 µg/ h for 7 days
- 10 Pectin
- 11 Microreservoir type of TDDS
- 12 slightly irritant
- 13 both paracellular and transcellular
- 14 Ethyl cellulose
- 15 acute toxicity study
- 16 esterification type depot formulation
- 17 olfactory mucosa or superior turbinate
predicts where in the respiratory tract such particles
18 deposit.
- 19 receptor mediated
- 20 Longer chain length of lipid

1 Normal pH of nasal secretion in Adults ranges between

- a 5.5-6.5
- b 7.0-7.5
- c 6.5-8.0
- d 4.0-5.0

2 Fine Particle Fraction is defined as

- a The fraction of emitted particles that are less than a particle size that is considered the upper limit of respirable.
- b The fraction of absorbed particles that are less than a particle size that is considered the upper limit of respirable.
- c The fraction of emitted particles that are less than a particle size that is considered the lower limit of respirable.

d The fraction of absorbed particles that are higher than a particle size that is considered the upper limit of respirable.

3 EPR Effect in tumor targeting indicates

a Enhanced Permeability Retention

b Effect Passive Rupture

c Efficient Permeation Release

d Effective Permeable Retained

4 Nose to Brain Delivery Occurs through following region

a Olfactory region

b Respiratory region

c Nasopharynx region

d Nasal vestibule

5 Following brand name depicts the Injectable depot formulation of Insulin

a Ultralente

b Depinar

c Duracillin

d Norplant

6 Vaccine preparation is an example of

a Adsorption type depot preparation

b Dissolution type depot preparation

c Encapsulation type depot preparation

d Esterification type depot preparation

7 Theory used to measure the strength of Mucoadhesion is

- a Fracture theory
- b Electronic theory
- c Diffusion theory
- d Adsorption theory

8 Which one of the following is described as the Buccal route?

- a Drug placed between cheek and gum
- b Drug placed between the tongue and upper palate
- c Drug placed under the tongue
- d Drug crushed and placed under the tongue

9 Which of the following is used as a rate-controlling membrane in Transdermal DDS?

- a Ethylene-Vinyl acetate copolymer
- b Methylene-Vinyl acetate copolymer
- c Ethylene-cetyl acetate copolymer
- d Methylene-cetyl acetate copolymer

10 Which of the following is a bile salt-based penetration enhancer?

- a Sodium taurocholate
- b Dioctyl sulphosuccinate
- c Dimethyl formamide
- d Azone

11 An Ocusert is used in the treatment of

- a Glaucoma
- b Conjunctivitis
- c Eye infection
- d Dry Eye Syndrome

- 12 Which of the following is a non-erodible Ocular insert?
- a Contact lens
 - b Lacrisert
 - c Minidisc
 - d Soluble ocular drug insert
- 13 Ideal Drug Candidate for Gastro Retentive Drug Delivery Systems is
- a Drug that has local effect in the stomach
 - b Drug that is absorbed primarily in the Intestine
 - c Drug that requires colonic metabolism
 - d Drug that is degraded by the gastric fluid
- 14 Which of the following is a Pelletization technique based on globulation?
- a Spray congealing
 - b Extrusion/ spheronization
 - c Powder layering
 - d Suspension layering
- 15 Which of the following is a gravity-fed extruder?
- a Rotary gear extruder
 - b Axial extruder
 - c Radial screw extruder
 - d Ram extruder
- 16 Which of the following method of formation of microspheres involves the formation of a w/o/w type of emulsion?
- a Double emulsion technique

- b Interfacial polymerization technique
- c Spray drying
- d Coarcervation Phase Separation technique

17 Which of the following is the physical method of dispersion used to prepare liposomes?

- a Hand shaking method
- b Ethanol injection
- c Double emulsion technique
- d Detergent solubilization

18 A polymer is made up of repeating units of

- a Monomer
- b Dimer
- c Trimer
- d Tetramer

19 Eudragit® is a brand name for which popular class of polymers?

- a Polymethacrylates
- b Cellulose derivatives
- c Gellan gum
- d Cellulose acetate butyrate

20 ----- measurement gives valuable data concerning aggregation potential and surface charge of microparticles

- a Zeta potential
- b Brownian movement
- c Morphology
- d pH

Sr. No.	Answer Key
1	5.5-6.5
2	The fraction of emitted particles that are less than a particle size that is considered the upper limit of respirable.
3	Enhanced Permeability Retention
4	Olfactory region
5	Ultralente
6	Adsorption type depot preparation
7	Fracture theory
8	Drug placed between cheek and gum
9	Ethylene-Vinyl acetate copolymer
10	Sodium taurocholate
11	Glaucoma
12	Contact lens
13	Drug that has local effect in the stomach
14	Spray congealing
15	Rotary gear extruder
16	Double emulsion technique
17	Hand shaking method
18	Monomer
19	Polymethacrylates
20	Zeta potential

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Multiple Choice Questions

Q. 1 The third phase of the migrating myoelectric cycle is:

- a Housekeeper wave phase
- b Basal phase
- c Pre-burst phase
- d Transitional phase

Q. 2 A challenge in the treatment of Brain tumours is

- a Inconsistent drug delivery
- b Hydrophilicity of drug
- c Large molecular size of drug
- d Less Partitioning of drug

Q. 3 Oropharynx is a part of

- a Nasal Region
- b Left Lung
- c Right Lung
- d Tracheal Region

Q.4 Ultrasound Implant Devices are

- a Activation Controlled System
- b Diffusion Controlled System
- c Matrix Controlled System
- d Dissolution Controlled System

Q.5 Carbopol® is a brand name for which popular class of polymers?

- a Acrylic acid derivatives
- b Cellulose derivatives
- c Gellan gum
- d Cellulose acetate butyrate

Q.6 Which of the following is a polymer precipitation technique used in the preparation of nanoparticles?

- a Salting out method
- b Dispersion polymerization method
- c Interfacial complexation method
- d Chemical crosslinking method

Q.7 Which of the following characteristic of a drug is desirable for formulation as an oral controlled DDS?

- a short half-life
- b Very high-water solubility
- c Instability in the small intestine
- d high protein binding

Q.8 Which polymer is used to disperse the drug pilocarpine in an Ocusert?

- a Alginic acid
- b Ethylene vinyl acetate
- c Hydropropyl methylcellulose
- d Hydroxypropylcellulose

Q.9 An example of pressure sensitive adhesive employed in the formulation of transdermal patches is:

- a Polyisobutylenes
- b Hydroxypropyl methylcellulose
- c Polyurethane
- d Ethylene vinyl acetate

Q. 10 Following Synthetic Polymer is used in Mucoadhesion

- a Polyvinyl Alcohol
- b Gelatin
- c Chitosan
- d Gaur Gum

Q. 11 Which of the following is the limitation associated with NDDS?

- a Dose dumping
- b Higher toxicities and ADRs
- c Lower effectiveness
- d No temporal control

Q. 12 Name the class of polymer that can be softened repeatedly by application of heat without any significant change in their properties.

- a Thermoplastic polymer
- b Natural polymer
- c Thermosetting polymer
- d Homopolymer

Q. 13 Niosomes are vesicles made up of which kind of surfactant?

- a Non-ionic
- b Anionic
- c Cationic
- d Amphiphilic

Q. 14 Which of the following osmotic system does not use an elastic diaphragm?

- a elementary osmotic pump
- b push pull osmotic pump
- c Rose Nelson pump
- d Higuchi Theeuwes Pump

Q. 15 The most common complications observed while using ocular iontophoresis for drug delivery is

- a Epithelial edema and burns
- b Blurring of vision
- c Loss of vision
- d Itching

- Q. 16 Transepidermal absorption occurs via:
- a Stratum corneum
 - b Sweat glands
 - c Hair follicles
 - d Sebaceous glands
- Q. 17 Gelation temperature of in-situ gel is
- a 37°c
 - b 25°c
 - c 30°c
 - d 42°c
- Q. 18 This system uses a piezoelectric crystal in pulmonary drug delivery system
- a Ultrasonic nebulizer
 - b Jet nebulizer
 - c Aerosol
 - d PMDI
- Q. 19 Buccal Drug delivery is a type of
- a Mucoadhesive Drug delivery
 - b Activated Drug delivery
 - c Conventional Drug delivery
 - d Feedback regulated Drug delivery
- Q. 20 Subcutaneous Implants are type of
- a Depot Formulations
 - b Conventional formulations
 - c Immediate release systems
 - d Short acting systems

Answer Key

1	a	Housekeeper wave phase
2	a	Inconsistent drug delivery
3	a	Nasal Region
4	a	Activation Controlled System
5	a	Acrylic acid derivatives
6	a	Salting out method
7	a	short half-life
8	a	Alginic acid
9	a	Polyisobutylenes
10	a	Polyvinyl Alcohol
11	a	Dose dumping
12	a	Thermoplastic polymer
13	a	Non-ionic
14	a	elementary osmotic pump
15	a	Epithelial edema and burns
16	a	Stratum corneum
17	a	37°c
18	a	Ultrasonic nebulizer
19	a	Mucoadhesive Drug delivery
20	a	Depot Formulations