



TECHNICAL UNIVERSITY OF MOMBASA
Faculty of Applied & Health Sciences
DEPARTMENT OF MEDICAL SCIENCES

DIPLOMA IN PHARMACEUTICAL SCIENCES
(DPT 12S/12J)

APM 2309: PHARMACEUTICS IV

SPECIAL/SUPPLEMENTARY EXAMINATIONS

SERIES: FEBRUARY 2015

TIME: 2 HOURS

INSTRUCTIONS:

- Answer All questions in Section **A** and **B**. Answer any **THREE** questions in Section **C**.
This paper consists of Nine printed pages.

SECTION A

1. The following are the major microbial contaminants of pharmaceutical EXCEPT:
 - A. Virus
 - B. Bacteria
 - C. Yeast
 - D. Moulds
2. In the stationary phase of bacteria growth curve
 - A. Population decreases as death of cells occurs
 - B. The depletion of nutrients and accumulation of toxic metabolic products slows down cell division and cell death equate
 - C. There is rapid growth even exponentially
 - D. It is period of adjustment to the new environment and usually the shortest
3. Bioavailability is an important term in biopharmaceutics. It refers to
 - A. The rate and extent to which the parent compound is eliminated from the body
 - B. The rate and extent to which the parent compound is eliminated from the body
 - C. The rate and extent to which the parent compound reaches the general circulation
 - D. The rate and extent to which the parent compound reaches half its concentration in body.
4. The half life of a drug ($t_{1/2}$) refers to:
 - A. The time it takes for blood levels of a drug to decrease to half of what it was at equilibrium
 - B. The time it takes for blood levels of a drug to increase to half of what it was at equilibrium.
 - C. The time it takes for blood levels of a drug to increase to half of what it was at equilibrium
 - D. None of the above
5. The following are terms used in the drug nomenclature. Which is NOT:
 - A. The chemical name
 - B. The international non-proprietary name (INN)
 - C. Commercial name
 - D. Prototype name
6. The following are drug metabolism factors that affect bioavailability of a drug. EXCEPT
 - A. Genetic factors
 - B. Environmental factors
 - C. Age
 - D. The drug formulation

7. Drug absorption process may proceed in.... order for active transport absorbed drugs
 - A. Zero order
 - B. First order
 - C. All above
 - D. None of the above

8. Drug absorption process may proceed in..... order for passive diffusion absorbed drugs
 - A. Zero order
 - B. First order
 - C. All the above
 - D. None of the above

9. The following methods are used in particle size analysis except
 - A. Sieving
 - B. Sedimentation
 - C. Optical microscopy
 - D. Filtration

10. Which of the following is not a mechanism of heat transfer from one system to another
 - A. Evaporation
 - B. Conduction
 - C. Convection
 - D. Radiation

11. Which of the following types of dryers is used for drying dilute solution?
 - A. Drum dryer
 - B. Tray dryer
 - C. Fluidized bed dryer
 - D. Freeze drying

12. Which of the following formation additives should not be used in chewable tablets?
 - A. Sweetening agents
 - B. Lubricants
 - C. Flavouring agents
 - D. Disintegrating agents

13. Highly soluble and highly permeable drugs are:
 - A. Rapidly absorbed across the GIT
 - B. Slowly absorbed across the BIT
 - C. None of the above
 - D. All of the above

14. Drugs which exhibit a slow equilibrium with peripheral tissues, are best described with
- A. One compartment model
 - B. Two compartment model
 - C. None of the above
 - D. All of the above
15. In lyophilization method of preservation
- A. The product is exposed to the sun and this enhances dehydration
 - B. The product is exposed to radiation particularly the UV
 - C. The product is freeze dried to eliminate the water under a vacuum and low temperature
 - D. None of the above
16. What are association colloids?
- A. Also called amphiphilic colloids
 - B. Are formed by naturally occurring emulsifying agents eg. Tragacanth
 - C. Are emulsions
 - D. Are gels
17. The following are kinetic properties of colloids, which one is NOT
- A. Light scattering
 - B. Brownian motion
 - C. Diffusion
 - D. Sedimentation
18. The particle size in suspension dispersion is between
- A. Below 1nm
 - B. Btw 1nm-500nm
 - C. 0.5 μ m-5 μ m
 - D. Above 5 μ m
19. Flocculated suspensions exhibit a flow type:
- A. Plastic
 - B. Pseudoplastic
 - C. Dilatant
 - D. Newtonian
20. Electrodialysis is used when impurities in a sol are;
- A. Amphiphiles
 - B. Hydrates
 - C. Electrolytes
 - D. Micelles

21. At concentration below critical micelle concentration (C.M.C) the surfactants occupy
- A. Above the surface of a liquid
 - B. In the bulk of the liquid
 - C. At the liquid air interface
 - D. Uniformly distributed in both phases
22. Dispersed phase of hydrophobic colloid usually consists of:
- A. Inorganic molecules
 - B. Aggregates of molecules
 - C. Organic molecules
 - D. Peptized molecules
23. The following are identification tests for emulsions which one is NOT?
- A. Miscibility test
 - B. Conductivity test
 - C. Dye test
 - D. Centrifugal test
24. The rate of diffusion in a colloidal sol can be determined by
- A. Noye's Whitney equation
 - B. Handerson-Hasselbasch equation
 - C. Stokes equation
 - D. Fick's equation
25. After peroral administration, drugs generally are absorbed best from the
- A. Buccal cavity
 - B. Stomach
 - C. Duodenum
 - D. Ileum
26. Which of the following is NOT an objective of enteric coating
- A. Achieve rapid release of the drug
 - B. Protect the drug from gastric fluid
 - C. Deliver drug to intended site of action
 - D. Prevent from gastric distress and nausea

27. The system that undergoes gel-sol transformation is known as
- A. Elastic
 - B. Shear thickening
 - C. Shear thinning
 - D. Thixotropic
28. Which one of the following is NOT a colligative property:
- A. Lowering of vapor pressure
 - B. Osmotic pressure
 - C. Sublimation and deposition
 - D. Depression of freezing point
29. The most important additional labelling required for suspensions is
- A. "For external use only"
 - B. Store in a cool dry place
 - C. Shake well before use
 - D. Discard after two weeks
30. Which of the following is not a method of preparation of lyophobic colloids?
- A. Condensation method
 - B. Dispersion methods
 - C. Use of colloidal mills
 - D. Dialysis
31. The following are requirements for large volume parenteral solutions, except;
- A. Sterile
 - B. Pyrogen free
 - C. Contain preservative
 - D. Isotonic with tears
32. Polyvinyl alcohol is commonly employed in pharmaceutical systems as a
- A. Viscosity builder
 - B. Preservative
 - C. Buffer
 - D. Lubricant
33. Convert 1 in 5000 solution into percentage strength
- A. 0.04
 - B. 0.014%
 - C. 0.01%
 - D. 0.02%

34. Pharmaceutical applications of size reduction are all intended for the following except:
- A. To increase the stability of emulsions
 - B. Increase the rate of solution formation of drugs
 - C. To prevent irritation of eyes by ophthalmic suspensions
 - D. To increase the flourability of powders into die cavity during compression cycle of tableting
35. Cations surfacants can be used in liqud desage from formulatin as
- A. Antimicrobial
 - B. Flavoring agents
 - C. Sweeting agents
 - D. Anti-oxidants
36. According to Noyers-Whitney equation, which of the following will lead to an increase in the rate of dissolution of a solid in an aqueous solution?
- A. Reduction of particle size of the drug
 - B. An increase in viscosity of the medium
 - C. Decreased agitation of the medium
 - D. Removal of dissolved drug from the medium
37. All the following are factors that affect sedimentation rate of particles in suspension EXCEPT
- A. Osmotic pressure
 - B. Gravity
 - C. Particle radius
 - D. Fluid viscosity
38. Which of the following statements about eye lotions is false?
- A. It is used as an eye irrigation solution
 - B. It is a sterile large volume aqueous solution
 - C. It should be isotonic with lachrymal secretions
 - D. It is a semi-solid non-aqueous preparation
39. Which of the following would be most irritating to the eye?
- A. Purified water
 - B. 0.7% sodium chrolide
 - C. 0.9% sodium chloride
 - D. 1.2% sodium chloride
40. All the following are disadvantages of gamma rays as a method of sterilization of pharmaceutical dosage forms?
- A. Difficulty of disposal of radioactive waste
 - B. Costly to install the equipment
 - C. Toxic to the personnel involved in the sterilization process
 - D. Has low penetration power

SECTION B

41. Name any **FOUR** types of tablets based on their use in pharmacy practice. **(4 marks)**
42. Differentiate between disintegration and dissolution of tablets. **(4 marks)**
43. Outline any **FOUR** disadvantages of glass as a packaging material. **(4 marks)**
44. State any **FOUR** pharmaceutical applications of emulsions. **(4 marks)**
45. a) Define the term 'filtration' as a unit operation process in pharmacy. **(1 mark)**
b) Outline **THREE** ways by which the rate of filtration may be increased. **(3 marks)**
46. Define the following liquid dosage forms:
i) Liniments
ii) Elixirs
iii) Douches
iv) Syrup
47. State one role played by each of the following formulation additives in eye drops
i) Sodium chloride
ii) Sodium sulphite
iii) Sodium edetate
iv) Hypromellose
48. State any **FOUR** applications of capsules other than oral administration of drugs. **(4 marks)**
49. Differentiate between hard and soft gelatin capsules. **(4 marks)**
50. Describe how amaranth red dye is used to determine an emulsion type. **(4 marks)**

SECTION C

51. Discuss the steps involved in sugar coating of tablets clearly stating the importance of each step. **(20 marks)**
52. a) State **TWO** disadvantages associated with powders as dosage form. **(2 marks)**
b) State any **TWO** factors that affect the stability of emulsions. **(2 marks)**
c) State any **FOUR** advantages and disadvantages of rubber as a material used in the manufacture of stoppers. **(8 marks)**
d) Describe the general safety consideration in the formulation and manufacture of ophthalmic products **(8 marks)**
53. a) Define the “Biopharmaceutics”
- b) Outline **FIVE** dosage form factors that influence the rate of drug absorption upon oral administration. **(10 marks)**
- c) Describe dialysis as a method of purification of colloidal solutions. **(8 marks)**