



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN PHARMACEUTICAL TECHNOLOGY

APM 2202 : PHRMACEUTICS I

SPECIAL/ SUPPLIMENTARY EXAMINATIONS

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

DATE: Pick Date Sep 2018

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **THREE** Section(s). Attempt All questions in section A and B and any two questions in section C.

Circle the correct answer in section A.

SECTION A 40 MARKS: ANSWER ALL QUESTIONS

1. Rheological properties can be measured using the following equipment's except?
 - a. Rheometer
 - b. Micro-capillary viscometer
 - c. Micro-rheology
 - d. Viscometer

2. Which characteristic best describes physical adsorption?
 - a. Involves transfer or sharing of electrons adsorbent and adsorbed molecules
 - b. Its irreversible
 - c. Surface reaction only proceeds above a certain temperature
 - d. Process is exothermic

3. Interfacial is important in pharmacy in the following ways except?
 - a. Penetration of molecules through biological molecules
 - b. Absorption of drugs onto solid adjuncts in dosage forms.
 - c. Emulsion formation and stability
 - d. The dispersion of insoluble particles in liquid media to form suspensions

4. The main consideration in the dosage form design involves the following except?
- Physicochemical considerations
 - Biopharmaceutical considerations
 - Economic considerations
 - Therapeutic considerations
5. The rate of diffusion in colloids is expressed by:
- Stokes law
 - Fick's law
 - Van't Hoff Law
 - Stoke's-Einstein Law
6. The point of pH at which a protein exists as a Zwitter ion is called?
- Acidic pH
 - Basic pH
 - Iso-electric point
 - None of the above
7. Which of the following materials are characterized by a constant viscosity proportional to change in strain rate?
- Newtonian
 - Non-Newtonian
 - Dilatant
 - None of the above
8. Which of the following best describes materials that undergo permanent deformation after sufficient applied stress?
- Elasticity
 - Rheopexy
 - Plasticity
 - None of the above
9. For the plastic materials, which of the following statement is true;
- Flow at all stresses and returns back to their original size and shape.
 - Do not undergo any deformation below the yield stress
 - Flow at and above the yield stress with the reversible deformation
 - Undergo irreversible deformation above yield stress,
10. Which of the following statement refers to dilatancy?
- It's also called shear-thickening
 - It's also called shear-thinning
 - There is a decrease in viscosity with increasing shear.

- d) Its common behavior for pharmaceuticals
- 11.** With reference to Bingham flow, which of the following statement is true?
a) Materials flow only when the yield point has been exceeded
b) The behavior of materials is elastic at high stresses
c) The Rheogram is a curve
d) It may be exhibited by dispersions of low viscosity
- 12.** Which of the following statements is true regarding non-Newtonian fluids
a) They have constant viscosity
b) They can never have constant viscosities
c) Their viscosities are apparent
d) Their velocities depend on the applied stress only.
- 13.** Which of the following statement is true about high rate of shear?
a. Will reduce viscosity in all systems
b. Will increase viscosity in all systems
c. Will increase viscosity in some systems
d. Both a and b
- 14.** Which of the following is not true?
a. Thixotropic agents are added to pharmaceuticals to flocculate them.
b. Controlled flocculation is favorable in pharmaceuticals.
c. Viscosity and yield point retard settling.
d. Introducing a charged particle may retard may retard coagulation
- 15.** When shear stress is plotted on the x-axis and the shear rate on the y-axis the slope of the curve represents?
a. Viscosity
b. Kinematic viscosity
c. Mobility
d. Fluidity
- 16.** Which of the following materials are characterized by a constant viscosity proportional to change in strain rate?
a. Newtonian
b. Non-Newtonian
c. Dilatant
d. None of the above
- 17.** The force that produces deformation divided by the area over which it is applied is called:
a) Viscosity
b) Stress
c) Shear
d) Newton's
- 18.** The rate of flow in viscosity is:

- a. The shear stress with units of S-1
 - b. The rate of shear with units of S-1
 - c. The rate of shear with units of S-2
 - d. The velocity gradient with units of m/s
- 19.** Surfactants can be divided into the following categories except?
- a) Anionic
 - b) Mono-valence
 - c) Non-ionic
 - d) Amphoteric
- 20.** The following is not a colligative property?
- a) Vapour pressure lowering
 - b) Freezing point elevation
 - c) Boiling point elevation
 - d) Osmotic pressure
- 21.** A solution that strictly obeys Raoult's law is referred to as:
- a) A real solution
 - b) An ideal solution
 - c) A non-ideal solution
 - d) All of the above
- 22.** Which of the following is an application for light scattering measurement in colloids?
- a. Estimating of particle size
 - b. Estimating particle charge
 - c. Estimating particle shape
 - d. Estimating particle interaction
- 23.** Which of the following statements is true regarding oil- soluble surfactants?
- a) Have high HLB values
 - b) Are hydrophilic
 - c) Are efficient solubilizing agents
 - d) Can be used as emulsifiers to produce water in oil emulsions
- 24.** In order to decrease interfacial tensions the best method would be
- a) To increase surface active agents
 - b) Mix two surfactants
 - c) Use very high level mixing
 - d) Increase surface active agents to CMC
- 25.** Which of the following statements is not true about Iso- electric point?
- a) It's the pH at which positive charges equals negative charges
 - b) It's the pH at which net charge of amino acid is zero
 - c) It's a definite pH not specific for each protein
 - d) At this pH particles are least soluble
- 26.** The stability of colloidal systems is affected by the following forces except?
- a) Forces of solvation
 - b) Electrical forces of repulsion
 - c) forces of attraction
 - d) Total potential energy
- 27.** Which of the following terms best describes close aggregation of particles which are difficult to re-disperse?
- a) Coagulation
 - b) Aggregation
 - c) Flocculation

- d) De-flocculation
28. The sedimentation of particles in a suspension can be minimized by:
- Increasing the particle size of the active ingredient
 - Decreasing the particle size of the active ingredient
 - Increasing the viscosity of the suspension
 - Both (b) and (c)
29. Surfactants are characterized by the presence of:
- Hydrophobic groups in the molecule
 - Hydrophilic groups in the molecule
 - Both hydrophobic and hydrophilic groups in the same molecule
 - Negative charges in the molecule
30. Which statement is not true of lyophobic colloids?
- High degree of solvation of dispersed particles
 - Thermodynamically unstable
 - Disperse phase consists of inorganic particles
 - Dispersion method may be used in its preparation
31. About Lyophobic colloids, which statement is true?
- They are solvent loving
 - May be referred to as hydrophobic
 - May so formed by proteins and gums
 - Do not require any emulsifying agent
32. Dispersions containing dispersed particles of about 1 μm to 100 μm size are referred to as:
- Coarse dispersions
 - Colloidal dispersions
 - Flocculated dispersions
 - Non-flocculated dispersion
33. Which of the following is not a kinetic property colloidal system?
- Brownian motion
 - Sedimentation
 - Diffusion
 - Electric double layer
34. With reference to electrical double layer, the following are the true except?
- The potential at the plane of shear is termed as stern potential
 - Surface charge influences the distribution of ions in the medium.
 - Counter ions are attracted forwards the surface of the medium
 - Two parts of the double layer are separated by stern plane
35. Which of the following is not a method used in the purification of colloids?
- Ultra-filtration
 - Condensation
 - Electrophoresis
 - Dialysis
36. The Tyndall effect represents which property of colloids
- Kinetic
 - Electrical
 - Shape and size

- d) Optical
37. Coagulation in Lyophilic colloids can be brought about by the following EXCEPT?
- Adding an electrolyte
 - Adding a non-solvent
 - Additions of macro-molecules
 - Mixing of Lyophilic colloids with different PH ranges
38. Emulsifiers assist in formation of emulsions by
- Reducing interfacial tension
 - Forming rigid interfacial film
 - Forming an electric double layer
 - All the above
39. The following are applications of adsorption except?
- Decolorizing agents
 - Improving flow properties
 - Adsorption chromatography
 - Descants and drying agents
40. Chemisorption has the following properties except?
- Its reversible
 - Happens rapidly
 - Requires activation energy
 - Only a mono-layer formation is possible.

SECTION B: 40 MARKS: ANSWER ALL QUESTIONS

41. Outline any four factors affecting the rate of solubility of solids in liquids (4 marks)
42. Differentiate between Lyophobic and Lyophilic colloids using relevant examples (4 marks)
43. The intensity of scattered beam of light in a colloidal solution depends on various factors state any of these four factors (4 marks)
44. Briefly describe Dispersion method of Lyophobic colloidal preparations (4marks)
45. Explain any four types of surfactant applied in pharmaceutical industry (4marks)
46. Briefly outline any four properties that offers non –ionic surfactants wide pharmaceutical applications (4marks)
47. Explain the relevance of rheology in pharmacy and other allied fields? (4marks)
48. Using appropriate examples, classify colloids into their distinct categories. (4 marks)
49. Using relevant rheogram explain the meaning plastic flow of materials in Rheology (4marks)
50. Describe Dialysis method used in purification of colloids (4 marks)

SECTION C: 40 MARKS (ANSWER ANY TWO QUESTIONS)

51. Describe the characteristics of the following electrical properties of colloidal dispersions (20 Marks)
- Ionization
 - Ion adsorption
 - Electrical double layer
52. A) Explain the factors affecting adsorption at liquid interface (10marks)
 B). Describe the application of adsorption in pharmacy and other allied fields (10 marks)
53. a) Using well elaborated examples discuss the factors to consider when selecting a particular route of drug administration (10 marks)
 b) Discuss the advantages and disadvantages of Oral drug administration into the body systems (10marks)

