

Time: 3 Hours

Marks: 75

Q. I Choose the appropriate option for the following multiple choice based questions. (20M)

- 1 Coulter counter is used to determine
 - a Number of particles
 - b Particle volume
 - c Particle interaction
 - d Viscosity

- 2 Andreason Pipette is widely used method to determine particle size distribution by
 - a Sedimentation method
 - b Microscopy method
 - c Seiving menthod
 - d Conductivity method

- 3 If the angle of repose is > 45 degrees, then flow will be
 - a Poor
 - b Excellent
 - c Passable
 - d Fair

- 4 Which of the following is the half life of Second order reaction
 - a $t_{1/2} = 0.693/k$
 - b $t_{1/2} = 1/ak$
 - c $t_{1/2} = A_0/2k$
 - d $t_{1/2} = A_0/2k$

- 5 Climate zone IV is
 - a Hot/dry climate
 - b Hot/humid climate
 - c Subtropical and Mediterranean climate
 - d Moderate climate

- 6 The effect of temperature on rate of reaction is explained by
 - a Nernst equation
 - b Arrhenius equation
 - c Noyes whitney equation
 - d Fick's law

- 7 _____ is the reaction of compounds and molecular oxygen
 - a Auto-Oxidation
 - b Hydrolysis
 - c Photolysis
 - d Thermolysis

- 8 Which of following is an example of shear thinning system:
a Tragacath in water
b 10% sugar in water
c Alcohol in water
d Benzene in water
- 9 As the temperature of liquid increases, what is the change in viscosity?
a Decreases
b Decreases with pressure
c Doesnot effect
d Increases
- 10 Kinematic viscosity is the:
a ratio of viscosity of dispersion to that of its liquid continuous medium
b ratio of specific viscosity to concentration
c absolute viscosity divided by density of liquid at specified temperature
d ratio of viscosity of continuous medium to that of its dispersion
- 11 A deformation that does not completely recover after the release of stress is known as
a plastic deformation
b elastic deformation
c pseudoelastic deformation
d this phenonon is non existent
- 12 Heckel relationship deals with
a. Force Density Relationship
b. Temperature Density relationship
c. Force Dissolution relationship
d. Temperature - surface tension relationship
- 13 The phenomenon of suspended solids growing in size during storage is known as ____
a Sedimentation
b Agglomeration
c Flocculation
d Crystal growth
- 14 Andreasen apparatus is widely used to determine particle size distribution by
a Microscopy method
b Sedimentation method
c Sieving method
d Conductivity method
- 15 Which is of the following is a correct sentence about emulsions
a All emulsions are heterogeneous systems
b All emulsions are homogeneous systems
c Some emulsions are heterogeneous systems
d Some emulsions are homogeneous systems

- 16 Emulsions can be stabilized by
- a electrostatic repulsion between the droplets
 - b electrostatic attraction between the droplets
 - c aggregation of droplets
 - d precipitation of droplets
- 17 Which of the following is a correct sentence
- a Creaming is an irreversible process
 - b Creaming is a reversible process
 - c Breaking is a reversible process
 - d The cream floccules cannot be easily redispersed.
- 18 Which of the following statement is correct
- a Lyophobic systems show most intense Tyndall effect
 - b Lyophilic systems show most intense Tyndall effect
 - c Lyophobic systems do not show Tyndall effect
 - d Lyophobic systems show little Tyndall effect
- 19 During the Brownian motion
- a the velocity of the particles increases with the decrease in particle size
 - b the velocity of the particles decreases with the decrease in particle size
 - c the velocity of the particles increases with the increase in particle size
 - d the velocity of the particles is not affected by the increase in particle size
- 20 Which of the following statement is correct
- a Linear colloidal materials yield dispersions of relatively low viscosity
 - b Spherical colloidal materials yield dispersions of relatively low viscosity
 - c Viscosity of the colloidal dispersion does not depend on the shape of the colloidal material
 - d Spherical colloidal materials yield dispersions of relatively high viscosity

Q.II Long Answer Questions (Answer any two) (20)

Q.1 (A) Mention the measures that could be taken to prevent or reduce hydrolytic decomposition of drugs. (5M)

(B) The initial concentration of a drug X was found to be 0.080 M. The concentration after 12 hours was 0.060 M. Calculate the reaction rate constant if decomposition of drug follows first order kinetics. (5M)

Q.2 Explain the terms with respect to powder properties: Void volume, True density, Bulk density, Granule density. (10M)

Q.3 Write a short note on Microemulsions. (10M)

Q.III Short Answer Questions (Answer any seven) (35)

1. Enlist the derived properties of powders. Explain Liquid displacement method to determine true density. (5M)
2. What are the methods used for determining particle surface area? Explain any one. (5M)
3. What are the limitations of accelerated stability studies? (5M)
4. Explain non-Newtonian type of flow (time independent) with rheograms, mechanism and suitable examples. (5M)
5. Describe elastic and plastic deformation of solids. (5M)
6. Write a short note on electrophoresis and sedimentation potential (5M)
7. What is zeta potential? (5M)
8. Describe the rheologic properties of emulsion. (5M)
9. Write a short note on coalescence and breaking. (5M)
