

Time : 3 Hrs.

Marks : 75

Question – I

1x20

- 1 Newton's law of viscosity relates:
 - a Intensity of pressure and rate of deformation
 - b Shear stress and rate of shear
 - c Shear stress and viscosity
 - d Viscosity and rate of shear

- 2 Reciprocal of viscosity is known as
 - a Fluidity
 - b Mobility
 - c Reduced viscosity
 - d Kinematic viscosity

- 3 Bingham bodies are materials that exhibit
 - a plastic flow
 - b pseudoplastic flow
 - c dilatant flow
 - d newtonian flow

- 4 Which one of the following is observed when high force is applied on the powder mass?
 - a Brittle fracture
 - b Elastic deformation
 - c Plastic deformation
 - d Elasticity

- 5 During elastic deformation, the stress–strain relationship for a specimen is described by
 - a Hooke's law
 - b Boyle's law
 - c Beer Lambert's law
 - d Charle's law

- 6is concentration of globules at the top or bottom of the emulsion.
 - a Coalescence
 - b Creaming
 - c Breaking
 - d Phase inversion

- 7 The sedimentation rate of particles in _____ suspension is found to be slow
 - a Deflocculated
 - b Flocculated
 - c Fine
 - d Coarse

- 8 In flocculated suspension, the supernatant layer is _____
- Cloudy
 - Clear
 - Turbid
 - Opaque
- 9 As the viscosity of the emulsion is _____ the flocculation of globules will be reduced.
- Lowered
 - Increased
 - Decreased
 - Maintained zero
- 10 In an emulsion, the relative volume of water and oil is expressed as _____.
- Phase concentration
 - Phase volume ratio
 - Phase inversion
 - Viscosity
- 11 Which of the following statement is correct
- Association colloids are usually moderately thermodynamically unstable
 - Association colloids are thermodynamically stable
 - Association colloids are usually slightly thermodynamically unstable
 - Association colloids are usually highly thermodynamically unstable
- 12 Which of the following statement is correct
- Linear colloidal materials yield dispersions of relatively low viscosity
 - Spherical colloidal materials yield dispersions of relatively low viscosity
 - Viscosity of the colloidal dispersion does not depend on the shape of the colloidal material
 - Spherical colloidal materials yield dispersions of relatively high viscosity
- 13 Which of the following statement is correct
- Lyophobic systems show most intense Tyndall effect
 - Lyophilic systems show most intense Tyndall effect
 - Lyophobic systems do not show Tyndall effect
 - Lyophobic systems show little Tyndall effect
14. The ratio of void volume to bulk volume is known as
- Porosity
 - Tapped density
 - Granule volume
 - Bulk Density

15. Coulter counter is used to determine

- a. Number of particles
- b. Particle volume
- c. Particle interaction
- d. Viscosity

16. The potential difference developed when particles settle under the influence of gravity is called

- a. Streaming potential
- b. Oxidation Potential
- c. Reduction potential
- d. Sedimentation potential

17. Which of the following is the half life of First order reaction

- a. $t_{1/2} = 0.693/k$
- b. $t_{1/2} = A_0/2k$
- c. $t_{1/2} = 0.693/2k$
- d. $t_{1/2} = 2k$

18. According to ICH guidelines, climate zone III is

- a. Hot/dry climate
- b. Subtropical and Mediterranean climate
- c. Hot/humid climate
- d. Moderate climate

19. The dielectric constant is used to measure

- a. Polarity of the solvent
- b. Spreadability of the solvent
- c. Viscosity of the solvent
- d. Temperature of the solvent

20. Accelerated stability testing is done to

- a. Predict shelf life of the formulation
- b. Predict dissociation constant
- c. predict diffusion constant
- d. determine activation energy

Q.II Long Answer Questions (ANSWER ANY TWO)

2x10

Q. 1: Differentiate between flocculated and deflocculated suspension. Describe the theory of sedimentation. Discuss the significance of sedimentation volume (10 M)

Q. 2: A- Explain Helium displacement method to determine true density.

B-. Write a note on derived properties of powders?

Q. 3- A How does temperature influence drug degradation. Explain with the help of Arrhenius equation.

B- The initial concentration of a drug X was found to be 0.065 M. The concentration after 12 hours was 0.041 M. Calculate the reaction rate constant if decomposition of drug follows first order kinetics.

Q.III Short Answer Questions (Answer any seven)

7x5

1. Write short note on classification of colloids.
 2. Discuss the dispersion methods to prepare lyophobic colloids
 3. Explain the DLVO theory
 4. Discuss any two mechanisms of crystal growth in suspension.
 5. Describe the non-Newtonian type of flow using rheograms and examples only.
 6. Describe the mechanical behaviour of solids in terms of stress- strain relationship.
 7. What is photolytic degradation? What are the ways to prevent it?
 8. What are the methods used for determining particle surface area? Explain any one.
 9. Explain using formula, three ways of measuring flow properties.
-