5. Differentiate flocculated and deflocculated suspensions. (5)

6. Explain the different approaches to achieve controlled flocculation of suspensions. (5)

7. What are pickering emulsions? Explain mono- and multi-molecular adsorption theories of emulsification. (5)

8. Discuss coalescence and breaking of emulsions. (5)

9. Discuss optical microscopic method of particle size determination. (5)

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UG (CBCS) EVEN SEMESTER EXAM, JULY 2024

PHARMACEUTICAL SCIENCES

(4th Semester)

Course No: BP - 403T

(Physical Pharmaceutics-II – Theory)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

I.A Multiple-choice questions 1x10=10

1. In colloidal dispersions, surface free energy can be reduced to 0, i.e., $\Delta G=0$, by these methods:

   I. a reduction of interfacial tension

   II. an increase in the interfacial area

   (a) Both are true (b) Both are false

   (c) Only I is true (d) Only II is true

2. Deformation due to stress is called _____.

   (a) plasticity (b) strain

   (c) elasticity (d) yield value

3. Suspending agent that is thixotropic as well as _____ should be useful as it forms gel on standing and fluid when disturbed.

   (a) plastic (b) pseudoplastic

   (c) dilatant (d) insoluble

4. A theory of emulsification should be able to explain:

   I. The stability of the product

II. The type of emulsion formed

(a) Both are true (b) Both are false

(c) Only I is true (d) Only II is true

5. Particle size determined by measuring the distance between two tangents drawn at opposite sides of the particle is called _____ diameter.

(a) Martin's (b) tangential

(c) geometrical (d) Feret's

6. The ratio of the void volume to bulk volume of the powder packing is known as _____

(a) Bulk density (b) Carr's index

(c) Hausner ratio (d) Porosity

7. The resolving power, d, is the smallest distance by which two objects are separated and yet remain distinguishable. The 'd' value for electron microscope is about ____ nm.

(a) 0.5 nm (b) 20 nm

(c) 10 nm (d) 100 nm

8. If the reaction is between similar charge ions (both + or both -), then an increase in ionic strength caused by the addition of a salt _____ the reaction rates

(a) have no influence (b) decreases

(c) increases (d) stops immediately

9. _____ is defined as the reciprocal of viscosity.

(a) Relative viscosity (b) Fluidity

(c) Surface tension (d) Kinematic viscosity

10. These materials are also called as shear-thickening systems.

(a) Pseudoplastics (b) plastics

(c) thixotropic (d) dilatants

I. B. Objective type 2x5=10

1. Define yield stress and plastic deformation. (2)
2. What are single point and multipoint viscometers? (2)
3. Provide the statement of Schulze-Hardy rule. (2)
4. What is micromertics? If the angle of repose is less than 20, what is the flow type? (2)
5. A tablet has 500mg paracetamol. If 25mg of paracetamol was found to degrade every year by a zero-order process. Calculate C0, K0, t1/2, and t90 for the above tablet. (2)

II. Long answers (Answer any two questions) 10x2=20

1. What are colloids? Give a detail classification of colloidal dispersions. (1+9=10)
2. Define rheology and viscosity. Explain plastic and dilation types of flow. (2+4+4=10)
3. What types of drugs are more susceptible of oxidative degradation? Discuss the approaches to provide protection against oxidative degradation.(2+8=10)

III. Short answers (Answer any seven questions) 5x7=35

1. What are the applications of micromeritics in pharmacy? (5)
2. Write a note on pseudoplastic flow. (5)
3. Discuss the kinetic properties of colloids. (5)
4. How will you perform powder flow evaluation in micromeritics? Discuss. (5)