UKA TARSADIA UNIVERSITY

B.Pharm. (3rd Semester)

Subject :030020301-Physical Pharmacy I

Time : 10:00 am to 1:00 pm   Date : **2**4/12/2013
Duration : 3 Hours   **Max. Marks: 70.**

Instructions:

  1. Attempt all questions.
  2. Write each section in a separate answer book.
  3. Make suitable assumptions wherever necessary.
  4. Figures to the right indicate full marks allocated to that question.
  5. Draw diagrams/figures whenever necessary.

SECTION - 1

Q-1 (A) Do as directed.   **[07]**

I) Define Eutectic mixtures.

II) Explain in short 'sublimation'.

III) What is 'Fine powder'?

IV) Give the equation to calculate mean surface and mean volume of a particle.

V) Name the three methods to express the Particle diameter by microscopy method.

VI) Define sieve number.

VII) What is plug flow?

Q-1 (B) Answer the following in brief. (Any 4)   **[08]**

I) Give the diference between granular density and bulk density.

II) Write the principle behind the Sedimentation method of particle size determination.

III) Give the relationship between angle of repose (ø) and Powder flow.

IV) What do you mean by solvets and hydrates?

V) Write the Faraday's first and secomd loe of electrolysis.

VI) Enumerate the different methods in determining particle size.

Q-2 Answer the following.   **[10]**

A) Define Micromeritics. Draw the neat labeled diagram, principal, construction and working of coulter counter partical size analyzer.

OR

A) Explain two methods in determining particle surface area in detail with necessary equations.

B) Explain and derive buffer equation.

OR

B) What is the importance of buffers in Pharmaceutical and biologic systems?

Q-3 Answer the following in detail. (Any 2)   **[10]**

A) Calculate the % porosity of atropine sulphate powder that has a true density of 3.95 g/cm^3. When 200g of powder is placed in a graduated cylinder, drug found to have true volume of 55ml.

B) Draw a typical phase diagram, and explain all the terms.

C) Write a note on polymorphism.

SECTION - 2

Q-4 (A) Do as directed. [07]

   I) Define Rheopexy.

   II) Give the different units of viscosity.

   III) Define kinematic viscosity.

   IV) Difference between relative viscosity and absolute viscosity

   V) What do you mean by 'Ideal' & 'Real' solutions?

   VI) Dalton's law

   VII) Define osmotic pressure.

Q-4 (B) Answer the following in brief. (Any 4) [08]

   I) BCS classification.

   II) Explain term shear thinning and shear thickening system with example.

   III) Calculate the pH of a 0.02 mol/L $Ba(OH)_2$ solution. (Assume 100% dissociation).

   IV) Name the Intrinsic and Extrinsic factors affecting viscosity.

   V) Draw the rheograms for Non- Newtonian flow.

   VI) A buffer solution was prepared which had a concentration of 0.20 mol dm^{-3} in ethanoic acid and 0.10 mol dm^{-3} in sodium ethanoate. If the K_a for ethanoic acid is 1.74 x 10^{-5} mol dm^{-3}, calculate the theoretical hydrogen ion concentration and pH of the buffer solution.

Q-5 Answer the following. [10]

   A) Define Viscosity. Classify viscosity with suitable examples, Explain any one multipoint viscometer with advantages and disadvantages.

OR

   A) Write & Explain Raoult`s law. Write the reasons for positive and negative deviation from Raoult`s law with reference to vapor pressure of solution.

   B) Explain the Arrhenius theory of electrolytic dissociation.

OR

   B) Explain Thixotropy in detail, explain the methods to determine the thixotropy.

Q-6 Answer the following in detail. (Any 2) [10]

   A) Describe the Beckmann method to determine freezing point lowering.

   B) Describe the factors affecting the solubility of solids in liquids.

   C) Define Molality and Normality. What are colligative properties? State the Henry's law.