



Name : .....  
Roll No. : .....  
Invigilator's Signature : .....

**CS / B.PHARM (NEW) / SEM-3 / PT-306 / 2010-11**  
**2010-11**

**PHARMACEUTICS ( PHYSICAL PHARMACY )**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**GROUP - A**  
**( Multiple Choice Type Questions )**

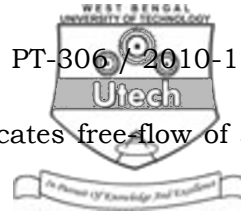
1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

- i) Porosity of a porous powder is defined as
- a) Bulk volume / void volume
  - b) Void volume / bulk volume
  - c) Void volume / true volume
  - d) True volume / bulk volume.
- ii) For an ideal suspension, the sedimentation volume should be
- a) Zero
  - b) Equal to 1
  - c) Less than 1
  - d) More than 1.

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[ Turn over ]



iii) Which range of angle of repose indicates free-flow of a powdered solid ?

- a)  $20^{\circ} - 30^{\circ}$                       b)  $30^{\circ} - 40^{\circ}$
- c)  $40^{\circ} - 50^{\circ}$                       d)  $50^{\circ} - 60^{\circ}$ .

iv) Thermal decomposition of drug can be determined by

- a) Differential scanning calorimetry
- b) Differential thermal analysis
- c) Thermogravimetric analysis
- d) all of these.

v) The decomposition of a drug in a suspension follows

- a) First order rate                      b) Zero order rate
- c) Pseudo zero order rate      d) Second order rate.

vi) In a reaction following first order rate, conc. decreases from  $100 \mu\text{g} / \text{ml}$  to  $50 \mu\text{g} / \text{ml}$  in 2 days. In what time, it decreases from  $25 \mu\text{g} / \text{ml}$  to  $12.5 \mu\text{g} / \text{ml}$  ?

- a) 4 days                                      b) 3 days
- c) 2 days                                      d) 1 day.



- vii) Above critical micelle concentrate further addition of surfactant
- a) decreases interfacial tension
  - b) increases interfacial tension
  - c) does not change interfacial tension
  - d) none of these.
- viii) Stokes law cannot be applied, if Reynolds number is more than
- a) 0.2
  - b) 1.8
  - c) 9.0
  - d) 18.0 .
- ix) The viscosity of acetone is found to be 0.313 cps at 25°C. Its density at 25°C is 0.788 g/cc. What is the Kinematic viscosity of acetone at 25°C ?
- a) 0.560 centistokes
  - b) 0.254 centistokes
  - c) 0.397 centistokes
  - d) 0.884 centistokes.
- x) A sample of Newtonian fluid is analyzed by applying a shear stress of 4000 dy/cm<sup>2</sup>. The rate of shear is found to be 200 sec<sup>-1</sup>. Calculate the coefficient of viscosity.
- a) 24 dy.sec /cm<sup>2</sup>
  - b) 20 dy.sec /cm<sup>2</sup>
  - c) 30 dy.sec /cm<sup>2</sup>
  - d) 40 dy.sec /cm<sup>2</sup>.

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xi) For oral administration of a suspension to a patient, which one of the following factors is the most important ?

- a) Acceptable colour and odour
  - b) Polymorphism
  - c) Specific surface area
  - d) Viscosity.
- xii) Electrolysis method is employed in the colloidal chemistry for the purpose of
- a) Identification
  - b) Preparation
  - c) Purification
  - d) Stabilization.

**GROUP - B**

**( Short Answer Type Questions )**

Answer any *three* of the following.  $3 \times 5 = 15$

2. a) What do you mean by Solubilization ?
- b) Define Krafft point and Cloud point.
- c) Write the importance of Krafft point.  $2 + 2 + 1$



3. Describe the influence of temperature on the rate of a reaction.
4. Classify complexes. Write the application of complexes in pharmacy and medicine.
5. Describe a method for the determination of surface tension of liquid.
6. Write briefly about Flocculation in structured vehicle in a pharmaceutical suspension.

**GROUP - C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. a) A formulation was found to degrade according to first order kinetics. The initial concentration is 100 units/ml. The specific decomposition rate obtained from an Arrhenius plot at 25 degree C, is  $2.01 \times 10$  hrs. Earlier experiments have shown that when the concentration falls below 70 units/ml, the product is not suitable for consumption. What should be the expiration period for the formulation ?



- b) What is accelerated stability studies ? What are the salient features and limitations of the accelerated stability study ? 5 + ( 2 + 8 )
8. a) The time for the flow of water through Ostwald viscometer at 20°C, is 292.5 sec. The time of flow is 80.2 sec, when the apparatus is filled with an organic solvent. The densities of water and liquid are 0.9982 and 1.1532 g/ml respectively. The viscosity of water at 20°C is 1.002 cp. Calculate the viscosity of the organic liquid at 20°C.
- b) Write the principle and working of Ostwald viscometer.
- c) Give the pharmaceutical applications of polymer. 7 + 5 + 3
9. Explain how binding of drugs to protein influences their action. Discuss the different factors affecting protein binding of drugs. Deduce the equation for Scatchard plot for drug-protein interaction. 5 + 4 + 6
10. What is suspension ? What are the desirable properties of an ideal suspension ? Explain different classifications of pharmaceutical suspension. Discuss the various additives used in the formulation of suspensions. 1 + 3 + 6 + 5



11. a) Describe number and weight distribution.
- b) Write in short about determination of particle size by optical microscopy method.
- c) Briefly explain the method for determination of particle volume.

4 + 5 + 6

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