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 : $10 \times 1 = 10$

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.

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

a) 20° - 30° b) 30° - 40°

c) 40° - 50° d) 50° - 60°.

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 μg /ml to 50 μg /ml in 2 days. In what time, it decreases from 25 μg /ml to 12·5 μg /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^2. The rate of shear is found to be 200 sec^{-1}. Calculate the coefficient of viscosity.

a) 24 dy.sec /cm^2 b) 20 dy.sec /cm^2

c) 30 dy.sec /cm^2 d) 40 dy.sec /cm^2.

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) Electrodialysis 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 2·01×10 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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