Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Pharm/SEM-2/MPT-206(2)/2013

2013

PHYSICAL PHARMACEUTICS

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) Which of the following ingredients retards the dissolution of a hydrophilic drug ?

   a) Lactose b) Starch

   c) Ethyl cellulose d) PVP.

   ii) Reversible gel-sol-gel transformation is due to a property known as

   a) Rheopexy b) Rheology

   c) Thixotropy d) none of these.

   iii) The intra-particle porosity of sulfadiazine granules having a granule density of 1·12 gm/cm^3 and true density of 1·50 gm/cm^3 is

   a) 50% b) 25%

   c) 30% d) 75%.

iv) At a constant temperature an increase in hydrocarbon chain length in the molecular structure of surfactants causes

a) proportional decrease in CMC

b) logarithmic decrease in CMC

c) logarithmic increase in CMC

d) proportional increase in CMC.

v) A value of angle of repose that describes excellent flow properties of power is

a) < 25° b) 25-30°

c) > 40° d) 30-40°.

vi) In Coulter counter, as particle travels through the orifice the event that occur is

a) conductance between electrodes increases

b) transmittance between electrodes decreases

c) transmittance between electrodes increases

d) conductance between electrodes decreases.

vii) The distance between inside bottom of the vessel and the basket/paddle blade of USP dissolution rate test apparatus is maintained at

a) 20 ± 2 mm b) 25 ± 2 mm

c) 25 ± 5 mm d) 20 ± 5 mm.

viii) In the manufacturing of pharmaceutical tables, sodium starch glycolate is used as

a) diluent b) superdisintegrant

c) glidant d) binder.

ix) In case of granular fragmentation during compression, when the compression force is increased the dissolution rate is

a) increased

b) decreased

c) unaltered.

x) For Interfacial Barrier Mode (IBM) the dissolution rate is

a) Increased with increase in rate of agitation

b) Decreased with increase in rate of agitation

c) Not dependent of rate of agitation.

xi) Buffered aspirin tablet is prepared to

a) Enhance the solubility of drug

b) Reduce the solubility of drug

c) Reduce gastric irritation.

xii) The viscosities of water and chloroform at 25°C are 0·8904 cps and 0·563 cps respectively. What is the relative viscosity of chloroform ?

a) 0·6323 b) 0·3236

c) 0·5632 d) 0·3732.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Distinguish among the terms compaction, compression and consolidation.

3. Write a note on porosity and its application in pharmacy.

4. Explain the liquid displacement method for the determination of true density of solid materials.

5. Discuss flow-through cell apparatus (USP-4) for the *in vitro* dissolution testing of pharmaceutical dosage form.

6. What do you mean by lubricant ? Discuss lubricant sensitivity measurement.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. Write about the preparation of synthetic hydrogels. Explain the diffusion properties of swollen hydrogels. How do swollen hydrogels modify release kinetics ? 5 + 5 + 5

8. Describe wet granulation technique for the production of granules in tableting operations. With a neat sketch, describe the operating principles of fluidized bed granulators. 10 + 5

9. Discuss the factors affecting the CMC of surfactants. Illustrate the thermodynamic aspects of micelle formation and its structure. What are the biological implications of surface active agents ? 3 + 6 + 6

10. Write short notes on any *three* of the following : 3 × 5

    a) Freeze granulation technology

    b) Hydrotrophy in pharmaceuticals

    c) Force distribution during compression

    d) Phase behavior of surfactants in binary and ternary systems.

11. a) Briefly discuss the parameters used to express particle size and shape.

    b) Discuss the various advanced tablet coating technologies being implemented in contemporary pharmaceutical industry. 5 + 10