



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.PHARM/SEM-2/MPT-206(2)/2012**

**2012**

**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 × 1 = 10

- i) The axial force applied on powder bed in a single punch machine decays
  - a) Logarithmically
  - b) Exponentially
  - c) Arithmetically
  - d) Harmonically.
- ii) Martin's and Ferret's diameters are used to express size of
  - a) spherical particles
  - b) irregular particles
  - c) fibrous particles
  - d) porous particles.
- iii) Log-normal size distribution is usually shown by
  - a) Hard granules
  - b) Soft granules
  - c) friable granules
  - d) fine granules.



- iv) Huasner's Ratio is related to
- a) flowability                      b) compressibility  
c) both of these                  d) none of these.
- v) Deviation of Heckel plot from linearity at low pressures is due to
- a) particle rearrangement  
b) particle fragmentation  
c) particle consolidation  
d) particle segregation.
- vi) Phase Law equation is
- a)  $F = C + P - 2$                   b)  $F = C - P + 2$   
c)  $F = C + P + 2$                   d)  $F = C - P - 2$ .
- vii) At the triple point of Phase-diagram of water ( L ), the degree of freedom is
- a) zero                                  b) one  
c) two                                  d) three.
- viii) Phase-diagram of Nicotine-water system shows only one Consolute Temperature.
- a) True                                  b) False  
c) More than two                  d) None of these.
- ix) When the cumulative per cent frequency is plotted on the probability scale against the logarithm of the particle size, the 50% value on the probability scale gives the ..... diameter.
- a) arithmetic                      b) geometric  
c) harmonic                        d) geometric mode.



- x) Kraft point is the temperature at which
- the solubility of surfactant is equal to CMC
  - the solubility of surfactant is less than CMC
  - the solubility of surfactant is higher than CMC
  - all of these.
- xi) 'Crospovidone' is used in tablet production as
- filler
  - binder
  - superdisintegrant
  - all of these.
- xii) Coulter counter does not give the information regarding the
- particle volume
  - particle shape
  - particle size
  - both (b) & (c).
- xiii) USP-5 dissolution rate test apparatus is known as
- paddle over disk
  - flow through cell
  - reciprocating cylinder
  - reciprocating holder.

**GROUP – B**

**( Short Answer Type Questions )**

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

- What are hydrogels ? Give the characteristic feature of such materials for their successful use as a drug delivery device.
- Briefly describe the sedimentation technique for the determination of particle size.
- Describe the role of surfactants in biological systems.
- What are the stages involved in tabling of powder ? Briefly discuss the mechanism of consolidation.
- Write notes on Kraft point and Cloud point.
- What is intrinsic dissolution ? How is it determined ? Explain its importance in dosage form development process.



**GROUP – C**

**( Long Answer Type Questions )**

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

8. a) Write a note on Heckel plot and Kawakita equation.  
b) Explain the force displacement diagram for a single punch tablet machine and its significance.  
c) What is a compaction profile ?  $5 + 5 + 5$
9. a) What are the various techniques for particle size determination ?  
b) Distinguish between Martin and Ferret's diameter and their significance in micromeritics.  $10 + 5$
10. a) Describe the wet granulation technique including the stages that occur following the addition of a granulating fluid to a mass of powder  
b) With a neat sketch, enumerate the key features and working principle of a fluidized bed granulator.  $8 + 7$
11. Define micelle. Describe the thermodynamics and kinetics of micelle formation. Briefly discuss the factors affecting the CMC.  $2 + 8 + 5$
12. a) What are the effects of test parameters on the dissolution rate ? Explain briefly.  
b) What is dissolution profiling ? How and why is it performed for oral solid dosage form development ? Explain the factors associated with the profiling.

$$7 \frac{1}{2} + 7 \frac{1}{2}$$

