



Printed Pages : 3

PH – 241

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 5052

Roll No.

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B. PHARM.

(SEM. IV) EXAMINATION, 2006-07

PHARMACEUTICS - IV

UNIT OPERATIONS - II

Time : 3 Hours]

[Total Marks : 80

- Note :*
- (1) Answer *all* questions.
 - (2) All questions carry *equal* marks.

1 Attempt any **four** of the following : **4×4**

- (a) Discuss the importance of unit operation in pharmaceutical technology.
- (b) Write note on
Primary and Secondary quantities
- (c) The dimensional formula of a heat transfer co-efficient h is $[h] = QL^{-2} \theta^{-1} T^{-1}$.

In an experiment h was found to be 200 Btu/h (sq.ft)^{°F}. What is the value in kcal/(sq.m) (°C) (hr)?

- (d) Discuss the following :
 - (i) Mole fraction
 - (ii) Graphical integration.
- (e) Write the application of dimensional analysis to heat transfer by natural and forced convection equations.

- 2** Answer any **four** of the following : **4×4**
- (a) Discuss the factors to be considered in the selection of an evaporator.
 - (b) Discuss the classification of pharmaceutical evaporators with their applications.
 - (c) Discuss the advantage, disadvantage and application of steam jacketed kettle with diagram.
 - (d) Write note on following :
Steam traps and their use in evaporation.
 - (e) Which equipment would you suggest for the continuous evaporation of large volume of an aqueous solution containing thermolabile constituents? Give reason.

- 3** Attempt any **two** of the following : **8×2=16**
- (a) Explain briefly boiling point diagram of the following mixtures :
 - (i) Alcohol - water
 - (ii) Benzene - Toluene.Discuss the behaviours of these mixtures during distillation.
 - (b) Discuss the construction and operational principle of large scale vacuum distillation unit. What are the advantage, difficulties and application in pharmacy.
 - (c) Derive Rayleigh's equation and write an experimental procedure to verify it. Discuss the principle of rectification.

4 Answer any **four** of the following : **4×4**

- (a) Distinguish an atmosphere compartment dryer from vacuum compartment dryer.
- (b) Comment briefly on the following statements :
 - (i) Freeze dried materials have very good solubility
 - (ii) IR drying can be used for drying aqueous solutions and sticky masses.
- (c) Derive the equation of q-line
$$Y = [-q/(1-q)]. X + X_F/(1-q)$$
- (d) Comment on the following :
 - (i) Moisture content and L.O.D.
 - (ii) Spray drying yields a porous product
- (e) Compare freeze drying with spray drying.

5 Attempt any **two** of the following : **8×2**

- (a) Discuss briefly the devices employed for measurement of temperature and pressure.
- (b) Write note on :
 - (i) Thermocouples
 - (ii) Pyrometers
 - (iii) Level measuring devices
 - (iv) Ionization gauges.
- (c) Distinguish the following
 - (i) Analog type Vs Digital type
 - (ii) Plug flow reactor Vs Continuous stirred tank reactor.