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

PAPER ID : 5052 Roll No. | | | | | | | | | | |

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 conviction 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.