

Roll No.....

Total No. of Questions : 10]

[Total No. of Pages : 02

## Paper ID [PH241]

(Please fill this Paper ID in OMR Sheet)

B.Pharmacy (Sem. - 4<sup>th</sup>)

PHARMACEUTICS - III (PHM - 2.4.1) (Theory)

(Unit Operation - II)

Time : 03 Hours

Maximum Marks : 80

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Three** questions from Section - C.

### Section - A

Q1)

(15 × 2 = 30)

- a) Equilibrium state
- b) Steady And Unsteady States
- c) Nusselt Number
- d) Black Body
- e) Material Balance
- f) Moisture Content
- g) Relative Volatility
- h) Mesh
- i) Emulsion
- j) Work Index
- k) Dew Point
- l) Wet Bulb Temperature
- m) Economy of An Evaporator
- n) Order And Molecularity of a Reaction
- o) Feedback Control Systems

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## Section - B

(4 × 5 = 20)

- Q2) Describe the construction and working principle of fluid energy mill with the help of a diagram. Give its application in pharmaceutical industry.
- Q3) Explain the behaviour of solids during drying.
- Q4) What is the difference between single and multiple effect evaporation?
- Q5) What are Froude and Power numbers in mixing? How can a mixing equipment be selected using these numbers.
- Q6) What is Azeotropic and Extractive Distillation. Explain with the help of suitable examples.

## Section - C

(3 × 10 = 30)

- Q7) A mixture containing 80 mole % methanol and 20 mole % water is to be distilled. The overhead product contains 99.99 mole % methanol and the bottom product 0.005 mol % methanol. The feed is saturated liquid. The reflux ratio at the top of the column is 1.35. Calculate the total no. of plates if the efficiency is 70% using McCabe Thiele method. Equilibrium data is given below.

X	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Y	0.417	0.579	0.669	0.729	0.78	0.825	0.871	0.915	0.959	1.0

- Q8) What is rate of drying? Find an expression for total drying time. Discuss the special drying methods in pharmaceutical industry.
- Q9) What are the objectives of size reduction? Discuss the laws governing energy and power requirements in size reduction.
- Q10) Explain various parts of automatic process control system. What are the applications of Computer Aided Manufacturing in Pharmaceutical Industry.

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