



JK-1612010701010100

Seat No. _____

M. P. M. (Sem. I) (CBCS) Examination

August / September - 2019

Unit Operation - I

Time : 3 Hours]

[Total Marks : 80

- Instructions :**
- (1) Answer and tie both the sections separately.
 - (2) Figure to the right indicate marks.
 - (3) Answer any three (3) questions from each section.
 - (4) Que. One (1) and Que. Five (5) are compulsory.
 - (5) Draw neat and clean diagrams as required.

SECTION - I

- 1** Answer any **seven** out of given ten questions : **7×2=14**
- (a) Differentiate evaporation and drying.
 - (b) Enlist the various factors affecting rate of filtration.
 - (c) Define the following terms: (i) Dew point, (ii) Wet bulb temperature.
 - (d) Give difference between absorption and compression system of Refrigeration.
 - (e) Define : Phase Diagram.
 - (f) Discuss the application of distillation in pharma industry.
 - (g) What do you mean by Azeotropic Distillation ?
 - (h) Enlist important factors affecting choice of dryers for pharmaceuticals.
 - (i) Define the terms: bound moisture and unbound moisture.
 - (j) What is the use of McCabe Thiele method in distillation ?
- 2** Answer the following :
- (a) Write principle, construction, working, advantages, disadvantages and applications of plate and frame filter press. **7**
 - (b) Explain the different factors affecting rate of evaporation. **6**

- 3 Answer the following :
- (a) Explain principal, construction, working and applications of Tray Dryer with labeled diagram. 7
 - (b) Discuss principle, advantages disadvantages and working of film evaporators. 6
- 4 Answer the following :
- (a) Draw the drying rate curve and explain the different stages in drying of solids. 7
 - (b) Define centrifugation. Discuss principle and theory of centrifugation. 6

SECTION - II

- 5 Answer any **two** out of given three questions : **2×7=14**
- (a) Describe principle, construction, working, merits and demerits of fluidized bed dryer with labeled diagram.
 - (b) Write a note on psychometric chart and measurement of humidity.
 - (c) Write a brief note on steam distillation.
- 6 Answer the following :
- (a) Describe compression refrigeration cycle with labelled diagram. 7
 - (b) Write a note on filter aids. 6
- 7 Answer the following :
- (a) Define dehumidification and explain its mechanism and approaches. 7
 - (b) Discuss the various mechanisms of filtration process. 6
- 8 Answer the following :
- (a) Discuss briefly the Duhring's rule and Raoult's law. 7
 - (b) Explain the different types of distillation column. 6