



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