







(iii) Discuss the role of time of evaporation and moisture content of feed in evaporation practice in pharmacy.

(iv) Explain the economy of multiple effect evaporation.

(v) Define pulverization and explain the mechanisms of size reduction.

(vi) List the specifications and standards for sieves.

(vii) Differentiate between solid mixing and liquid mixing. Write the applications of mixing in pharmaceuticals.

(viii) Explain positive deviation and negative deviation in distillation process with proper figures.

(ix) Discuss different methods of control of air pollution.

(x) Explain Azeotropic distillation with suitable examples.

(xi) What is meant by overall heat transfer coefficient ? What is its significance ?



2. Answer any *eight* of the following questions :

5×8=40

- (i) Describe the conduction of heat through a circular pipe. Give suitable equations for rate of heat transfer and explain the term.
- (ii) Define rectification. Explain different approaches for enhancing efficiency of fractional distillation.
- (iii) Describe the principle with the help of a labelled diagram of Spray dryer.
- (iv) State and explain the theories and laws governing size reduction.
- (v) Classify evaporators. Write a note on calandria.
- (vi) Explain an evaporator of your choice with figure used for evaporation of thermo labile drug substances.
- (vii) Differentiate between LOD and MC. Explain drying rate curve with figure.
- (viii) Discuss the mode of motion in size separation. Enlist different size separation equipments used for industrial method.



(ix) What are ideal mixing and acceptable mixing? Discuss the different statistical parameters for determination of degree of homogeneity.

(x) Discuss the causes and control of water pollution.

3. Answer any *three* of the following questions :

10×3=30

(i) What is the principle of freeze drying? Explain the construction and working of freeze dryer with neat sketch. 2+8=10

(ii) Discuss the merits and demerits of size reduction. Describe the construction, working and uses of fluid energy mill. 4+6=10

(iii) What are the reasons for vortex formation? What are the drawbacks of vortex? Suggest solutions for the problems of vortex formation. 3+3+4=10

(iv) Write notes on any *two* of the following :

5×2=10

(a) Heat exchangers and heat interchangers.

(b) Distillation under reduced pressure.

(c) Ball mill.