

## PHARMACEUTICAL UNIT OPERATIONS-II

**Time: 3 hours****Max. Marks: 70**

Question Paper Consists of **Part-A** and **Part-B**  
 Answering the question in **Part-A** is Compulsory,  
 Three Questions should be answered from **Part-B**

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## PART-A

1. (a) Define conduction and convection with equations.  
(b) Define the following with equations  
(i) Raoult's Law (ii) Relative volatility  
(c) What are the factors influencing evaporation?  
(d) Write a short note on mechanism of drying.  
(e) Write a short note on modes of size reduction with examples.  
(f) What do you mean by vortex? How is it prevented?

[3+3+4+4+4+4]

## PART-B

2. (a) What is Conduction? Explain the Fourier's law of conduction for a cylindrical tube.  
(b) Write a note on Tubular Heater. [10+6]
3. (a) Write the theory of evaporation.  
(b) Explain in detail about climbing film and falling film Evaporators. [6+10]
4. (a) Write the working principles of large scale industrial simple distillation.  
(b) Write the principle, construction and working of Flash Distillation. [8+8]
5. (a) Explain drying curves.  
(b) Write in detail about principle, construction and working of Spray Dryer and freeze dryer. [4+12]
6. (a) What is Size reduction? Explain in detail about factors effecting size reduction.  
(b) Explain the principle, construction, working and applications of Ball mill. [6+10]
7. (a) Write the principle, construction, working & uses of planetary mixer.  
(b) Write working principle of colloid mill with pharmaceutical applications. [8+8]

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