## SECOND B.PHARM. EXAM
## PAPER IV – PHARMACEUTICAL TECHNOLOGY
*Q.P. Code : 564259*

**Time : Three hours**                          **Maximum: 100 Marks**

(180 Min)    Answer ALL questions in the same order.

## I. Elaborate on:

|  | Pages (Max.) | Time (Max.) | Marks (Max.) |
|---|---|---|---|
| 1. Explain the principle and working procedure of Fractional distillation apparatus. Illustrate the fractional distillation of the mixture of components with the boiling point-composition diagram. | 19 | 33 | 20 |
| 2. Describe the mechanism and different modes of stress applied in size reduction? Write the principle, construction and working of Fluid energy mill. | 19 | 33 | 20 |

## II. Write notes on:

| | | | |
|---|---|---|---|
| 1. Measurement of rate of flow of fluids by venturi meter. | 3 | 8 | 5 |
| 2. Theories of filtration. | 3 | 8 | 5 |
| 3. Short tube Evaporator. | 3 | 8 | 5 |
| 4. Physical Factors influencing selection of materials of pharmaceutical Plant Construction. | 3 | 8 | 5 |
| 5. Fluidised bed dryer. | 3 | 8 | 5 |
| 6. Mechanism of Crystallization. | 3 | 8 | 5 |
| 7. Planetary mixer. | 3 | 8 | 5 |
| 8. Cyclone separator. | 3 | 8 | 5 |

## III. Short Answers:

| | | | |
|---|---|---|---|
| 1. Primary Refrigerants with examples. | 1 | 5 | 2 |
| 2. Different mechanisms of Heat flow. | 1 | 5 | 2 |
| 3. Destructive distillation. | 1 | 5 | 2 |
| 4. Humidity Ratio. | 1 | 5 | 2 |
| 5. Corrosion. | 1 | 5 | 2 |
| 6. Electrostatic precipitation. | 1 | 5 | 2 |
| 7. Centrifugal effect. | 1 | 5 | 2 |
| 8. Bernoulli's  theorem. | 1 | 5 | 2 |
| 9. Caking of crystals. | 1 | 5 | 2 |
| 10. Free moisture content. | 1 | 5 | 2 |

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**SECOND YEAR B.PHARM. EXAM**
**PAPER IV – PHARMACEUTICAL TECHNOLOGY**
*Q.P. Code : 564259*

Time : Three hours                                                  Maximum: 100 Marks
   (180 Min)

**I. Elaborate on:**                                                 **(2x20=40)**
   1. Define Crystallization. Discuss about the Mier's Super
      Saturation Theory. Enumerate the Principle,
      construction, working and advantages of Swenson
      Walker Crystallizer.
   2. Explain the theory behind Correction. How will you
      prevent and control Corrosion?

**II. Write notes on:**                                              **(8x5=40)**
   1. Central Air Conditioning System.
   2. Multiple Effect Evaporator.
   3. Steam distillation of Industrial scale.
   4. Glass as the material of Pharmaceutical plant Construction.
   5. Chemical hazards.
   6. Equilibrium Moisture content.
   7. Conical disc centrifuge.
   8. Rotary Drum Filter.

**III. Short Answers:**                                              **(10x2=20)**
   1. Area meters.
   2. Cake Filtration.
   3. Vortex Formation.
   4. Circulating load.
   5. Definition of Valves and Pumps.
   6. Different sources of heat.
   7. Eutectic Point.
   8. Comminution.
   9. Binary mixture.
   10. Bound Water.

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**SECOND YEAR B.PHARM. EXAM**
**PAPER IV – PHARMACEUTICAL TECHNOLOGY**
*Q.P. Code: 564259*

Time: Three Hours                  Maximum: 100 marks

## I. Elaborate on:                  (2X20=40)

1. Discuss in detail about the method of determination of humidity by dewpoint and psychometric methods

2. Write the principle and procedure involved in extractive and azeotropic distillation process add a note on the application of distillation process.

## II. Write notes on:                  (8X5=40)

1. Spary dryer
2. krystal crystallizer
3. Factors affecting filltration
4. Types of measurement of flow of fluids
5. Factors affecting size reduction
6. Tubular heaters
7. Vertical tube evaporators
8. Considerations while mixing solids in a mixer.

## III. Short Answers on:                  (10X2=20)

1. Percentage humidity
2. Laminar flow
3. Fourier's law
4. Lyophilisation
5. Applications of centrifugation
6. Galvonic corrosion
7. Seitz filter
8. Saturation temperature
9. Venturimeter
10. Critical moisture content

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**(LE 4259)**                    **FEBRUARY 2014**          **Sub. Code: 4259**

**SECOND YEAR B.PHARM. EXAM**
**PAPER IV – PHARMACEUTICAL TECHNOLOGY**
*Q.P. Code: 564259*

Time: Three Hours                                         Maximum: 100 marks

**I. Elaborate on:**                                                  **(2X20=40)**

1. Explain the principle, construction, working and application of Film evaporators.
2. Enumerate the various factors affecting filtration. Discuss about Rotary filter.

**II. Write notes on:**                                               **(8X5=40)**

1. Azeotropic distillation.
2. Freeze dryer.
3. List out types of valves and explain any one.
4. Enumerate mechanism involved in size reduction with suitable example.
5. Sources of heat.
6. Sigma blade mixer.
7. Krystal crystalliser.
8. Stainless steel as materials of plant construction.

**III. Short Answers on:**                                            **(10X2=20)**

1. Relative humidity.
2. Steam distillation.
3. Multiple effect evaporator.
4. Sublimation.
5. Prevention of fire hazards.
6. Filter media.
7. Types of crystals.
8. Relative Volatality.
9. Triplle roller mill.
10. Double cone blender.

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## SECOND YEAR B.PHARM. DEGREE EXAMINATION

### Paper IV – PHARMACEUTICAL TECHNOLOGY

*Q. P. Code: 564259*

**Time: Three Hours**                                    **Maximum: 100 Marks**

**Answer All Questions**

**I. Essay Questions:**                                    **(2 x 20 = 40)**

1. a) Write a role on stainless steel in material of plant construction in the pharmaceutical industry.

   b) Draw and explain the Psychrometric chart.

2. Define viscosity and explain about Venturimeter and Orifice meter.

**II. Short Notes:**                                        **(8 x 5 = 40)**

1. Explain Raoult's law of distillation.

2. Write a note on chemical hazards.

3. Give an account on gear pump.

4. Explain cartridge filter.

5. Write briefly on mechanism of heat transfer.

6. What are the uses, advantages and disadvantages of fluidized bed dryer?

7. Write a note on double cone blender.

8. Write the construction and working of ball mill.

**III. Short Answers:**                                     **(10 x 2 = 20)**

1. How will you prepare super saturation solution for crystallization from a given solution?

2. Define valves.

3. What are all the disadvantages with thermostatic steam trap?

4. Define evaporation.

5. Define centrifugation.

6. Uses of phase diagram

7. Define humidity.

8. Define Bernouli's theorem.

9. Define distillation.

10. Advantage of hammer mill.

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## SECOND YEAR B.PHARM. EXAMINATION
### PAPER IV – PHARMACEUTICAL TECHNOLOGY
*Q.P. Code: 564259*

**Time: Three hours**                                **Maximum: 100 marks**

**I. Essay:**                                              **(2 x 20 = 40)**

1. Explain the methods of heat transfer and give in detail heat transfer by conduction.
2. a) Write working principle, construction, advantages and disadvantages of conical disc centrifuge.

   b) Explain Meir's theory of crystallization.

**II. Short notes:**                                       **(8 x 5 = 40)**

1. Write a note on filter media
2. Discuss on gate valve
3. Give a note on glass as materials of plant construction
4. Explain rotary cutter mill
5. How will you prevent dust hazards in pharmaceutical industry?
6. Explain the various laws of size reduction
7. Write in detail falling film evaporator
8. Discuss rotameter

**III. Short answers:**                                    **(10 x 2 = 20)**

1. Give all types of manometers
2. Dew point
3. What is direct weighing of fluid flow?
4. Define crystals
5. Define RH
6. What are the disadvantages of plate and frame filter press?
7. Write advantages of glass as plant construction
8. Define accident records
9. Define corrosion
10. What is adiabatic cooling lines?

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## B.PHARM. DEGREE EXAMINATION

### SECOND YEAR

### PAPER IV – PHARMACEUTICAL TECHNOLOGY

*Q.P. Code: 564259*

**Time : Three Hours**                                              **Maximum : 100 marks**

**Answer All Questions**

**I. Essay:**                                                                 **(2 x 20 = 40)**

1. Explain the principle and working procedure of Fractional distillation apparatus. Illustrate the fractional distillation of the mixture of components with the boiling point-composition diagram.

2. Define corrosion and various types of corrosion. Describe on prevention and control of corrosion.

**II. Short notes :**                                                       **(8 x 5 = 40)**

1. Short tube Evaporator.

2. Fluidized bed dryer.

3. Cyclone separator.

4. Solubility curve.

5. Planetary mixer.

6. Orifice meter.

7. Fluid energy mill.

8. Special drying methods.

**III. Short answers:**                                                   **(10 x 2 = 20)**

1. Humidity Ratio.

2. Centrifugal effect.

3. Caking of crystals.

4. Reynolds's number.

5. What are alloys give any two examples?

6. Name the equipments used for dehumidification.

7. Application of glass.

8. What is latent heat?

9. Define filter media.

10. Types of liquid movement.

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## SECOND YEAR B.PHARM. EXAMINATION
## PAPER IV – PHARMACEUTICAL TECHNOLOGY

*Q.P. Code: 564259*

**Time: Three hours**                                    **Maximum: 100 Marks**

**I. Essay:**                                                    **(2 x 20 = 40)**

1.  a)  Describe the Construction and Working, advantages and disadvantages of Rotary drum Filter.
    b)  Explain the Various factors affecting Filtration.

2.  a)  Discuss the Concept of Dehumidification and application of Humidity Measurement. Name the equipments used for Dehumidification.
    b)  Describe the Principle and Application of Refrigeration.

**II. Short notes:**                                            **(8 x 5 = 40)**

1.  Rota meter.
2.  Hammer Mill.
3.  Manometer.
4.  Tubular Heater.
5.  How will you prevent Fire Hazards in Pharmaceutical Industries?
6.  Swenson Walker Crystallizer.
7.  Chemical Hazards.
8.  Concepts of Boundary layer.

**III. Short answers:**                                        **(10 x 2 = 20)**

1.  Define Filter Aids.
2.  What are the different modes of Size reduction?
3.  What are the different Standards for Sieves in Size separation?
4.  Write the classification of Materials for Plant construction.
5.  Define Raoult's Law.
6.  Saturation temperature.
7.  Name the dryers used in Pharmaceutical Industries.
8.  Critical Moisture Content.
9.  Lyophilisation.
10. Define Relative Humidity.

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## SECOND YEAR B.PHARM. EXAMINATION
## PAPER IV – PHARMACEUTICAL TECHNOLOGY

*Q.P. Code: 564259*

**Time: Three hours**                    **Maximum: 100 Marks**

**I. Essay:**                    **(2 x 20 = 40)**

1. Explain the construction, working, advantages and disadvantages of filter press and filter leaf.

2. Classify Evaporators. Describe construction and working of a film Evaporator.

**II. Short notes:**                    **(8 x 5 = 40)**

1. What are the advantages of size reduction?
2. Explain the working principle of cyclone separator.
3. Give five pharmaceutical applications of Industrial centrifuges.
4. Explain the working of flash distillation.
5. Write note on theory of crystallization.
6. Describe the working of refrigerator.
7. Write the factors influencing rate of corrosion.
8. Write briefly on mechanism of heat transfer.

**III. Short answers:**                    **(10 x 2 = 20)**

1. Define drying. Give its importance in the formulation of dosage forms.
2. Laminar Flow.
3. Write note on check valves.
4. Explain the construction of calandria.
5. Define crystal.
6. Classify driers.
7. Define humidification.
8. Types of corrosion
9. Advantages of plastics.
10. Uses of Phase diagram.

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**B.PHARM. EXAMINATION**
**SECOND YEAR**
**PAPER IV – PHARMACEUTICAL TECHNOLOGY**

*Q.P. Code: 564259*

Time: Three hours　　　　　　　　　　　　　　Maximum: 100 Marks

## I. Elaborate on:　　　　　　　　　　　　　　　　　(2 x 20 = 40)

1. Write the principle, construction, working, application, merits and demerits of freeze drying.

2. a) Describe the principle and factors affecting size reduction.
   b) Discuss in detail ball mill.

## II. Write notes on:　　　　　　　　　　　　　　　　(8 x 5 = 40)

1. Describe with a diagram 'Venturimeter'.
2. Discuss the principle underlying centrifugation.
3. Describe Mier's Theory of super saturation.
4. Explain the principle of steam distillation process.
5. Principle and applications of Air-condition.
6. Types of measurement of flow of Fluids.
7. Multiple effects Evaporator.
8. Gear pump.

## III. Short answers on:　　　　　　　　　　　　　　(10 x 2 = 20)

1. Application of stainless steel material in pharmacy.
2. What is azeotropic distillation?
3. Define nucleation in crystallization.
4. Define Humidity.
5. Define Bernouli's Theorem.
6. Define Valve.
7. Different sources of Heat.
8. Eutectic Point.
9. Define filtration.
10. Crystal Lattice.

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**B.PHARM. DEGREE EXAMINATION**
**SECOND YEAR**
**PAPER IV – PHARMACEUTICAL TECHNOLOGY**

*Q.P. Code: 564259*

Time: Three hours                                        **Maximum: 100 Marks**

**I.  Elaborate on:**                                        **(2 x 20 = 40)**

1.  a) Explain the construction, working, advantages and disadvantages of drum filter.
    b) Write factors influencing the rate of filtration.

2.  Describe the construction, working, advantages and disadvantages of colloidal mill and Fluid energy mill.

**II. Write notes on:**                                        **(8 x 5 = 40)**

1.  Describe in detail about humidity.
2.  Explain the principle and working of silverson mixer.
3.  Discuss the Miers super-saturation theory of crystallization.
4.  Describe the construction and working of falling film evaporator.
5.  Describe various types of iron as material of construction.
6.  Describe the principle, working and applications of steam distillation.
7.  Discuss the theories involved in fluid flow.
8.  Write notes on valves.

**III. Short answers on:**                                        **(10 x 2 = 20)**

1.  Define polymorphism.
2.  What is calandria?
3.  Classification of evaporators.
4.  Define dry distillation.
5.  Application of centrifugation.
6.  Define filtration.
7.  Define mixing.
8.  What are the grades of powder?
9.  Mechanisms of heat flow.
10. What is minus material?

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# THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

## B.PHARM. DEGREE EXAMINATION
### SECOND YEAR
### PAPER IV – PHARMACEUTICAL TECHNOLOGY

*Q.P. Code: 564259*

**Time: Three hours**                                                    **Maximum: 100 Marks**

## I. Elaborate on:                                                         (2 x 20 = 40)

1. Describe the construction, working principle, efficiency, merits and demerits of Fractional Distillation.

2. a) Explain the principle, construction, working of Krystal crystallizer.
   b) Write in detail about factors affecting caking of Crystals.

## II. Write notes on:                                                      (8 x 5 = 40)

1. Factors influencing evaporation.
2. Solubility curve.
3. Materials used for plant construction.
4. Fourier's law and its application.
5. Theories of filtration.
6. Super centrifuge.
7. Fluidized bed dryer.
8. Humidity chart and its uses.

## III. Short answers on:                                                   (10 x 2 = 20)

1. Dew point.
2. Types of sieves.
3. Refrigeration load.
4. Manometer.
5. Equilibrium moisture content.
6. Volatility and relative volatility.
7. Lyophilization.
8. Radiation.
9. Turbulent Flow.
10. Raoult's Law.

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# THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

(LN 4259)　　　　　　　**AUGUST 2018**　　　　　Sub. Code: 4259

**B.PHARM. DEGREE EXAMINATION**
**SECOND YEAR**
**PAPER IV – PHARMACEUTICAL TECHNOLOGY**

*Q.P. Code: 564259*

Time: Three hours　　　　　　　　　　　　　　**Maximum: 100 Marks**

**I. Elaborate on:**　　　　　　　　　　　　　　　　　**(2 x 20 = 40)**

1. a) Explain the construction, working and applications of climbing film evaporator.
   b) Write factors influencing the rate of evaporation.

2. a) Write the applications of size reduction.
   b) Describe the construction, working, advantages and disadvantages of freeze Dryer.

**II. Write notes on:**　　　　　　　　　　　　　　　　**(8 x 5 = 40)**

1. Explain the working of a cyclone separator and its usefulness.
2. Write note on Humidity chart.
3. Describe the construction and working of a triple roller mill.
4. Give five pharmaceutical applications of industrial centrifuges.
5. Describe the principles, working and applications of steam distillation.
6. What is corrosion? Write the types of corrosion. How can corrosion be prevented?
7. Describe the working of a refrigerator.
8. Explain the principle and working of colloidal mill.

**III. Short answers on:**　　　　　　　　　　　　　　**(10 x 2 = 20)**

1. What are various grades of powders?
2. Darcy's law.
3. What are filter aids? Give examples.
4. Define flash distillation.
5. Classify dryers.
6. What is calandria?
7. Mechanisms of heat transfer.
8. Define humidification.
9. Applications of stainless steel in pharmaceutical industry.
10. Mechanisms of liquid mixing.

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(LO 4259)          **FEBRUARY 2019**          Sub. Code: 4259

**B.PHARM. DEGREE EXAMINATION**
**SECOND YEAR**
**PAPER IV – PHARMACEUTICAL TECHNOLOGY**

*Q.P. Code: 564259*

Time: Three hours                                    **Maximum: 100 Marks**

**I. Elaborate on:**                                    **(2 x 20 = 40)**

1. a) Explain stainless steel as materials of plant construction.
   b) Write about various industrial hazards and methods to prevent it.

2. a) Construct multiple effect evaporator neatly and explain the process with its merits and demerits.
   b) Explain different zone of Rotary filter.

**II. Write notes on:**                                    **(8 x 5 = 40)**

1. Brief with a neat diagram working of diaphragm valve.
2. Write the various filter aids with examples.
3. Swenson walker crystallizer.
4. Explain the psychrometric chart.
5. Write the mechanisms of heat transfer.
6. Construction and working of fluid energy mill.
7. Types of fractionating columns in distillation.
8. Write the theory of mixing. Note on any one equipment used in solid solid mixing.

**III. Short answers on:**                                    **(10 x 2 = 20)**

1. Define corrosion.
2. What is wet bulb temperature?
3. Mechanism of nucleation of crystals.
4. Write the principle of centrifugation.
5. Define Raults law for vapor pressure.
6. What are Azeotrophs?
7. Mechanisms of size reduction.
8. What is Reynolds number?
9. Principle of working of manometer.
10. Write any two factors affecting filtration.

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**(LP 4259)**            **AUGUST 2019**            Sub. Code: 4259

**B.PHARM. DEGREE EXAMINATION**
**SECOND YEAR**
**PAPER IV – PHARMACEUTICAL TECHNOLOGY**

*Q.P. Code: 564259*

Time: Three hours             **Maximum: 100 Marks**

**I. Elaborate on:**             **(2 x 20 = 40)**

1. a) Discuss the Mier's super-saturation theory of crystallization. What are the limitations of the Mier's theory?
   b) Explain the principle, working and applications of Krystal crystallizer.

2. Explain the construction, working, advantages and disadvantages of Fluidised bed dryer.

**II. Write notes on:**             **(8 x 5 = 40)**

1. Explain the construction and working of a ball mill.
2. Describe the construction and working of a silverson mixer.
3. Describe the construction and working of leaf filters.
4. Classify industrial centrifuges. Write construction and working of a perforated basket centrifuge.
5. Write the pharmaceutical applications of distillation.
6. What are possible industrial hazards? How can they be controlled?
7. Describe various types of iron as materials of construction.
8. Explain the construction and working of a multiple effect evaporator.

**III. Short answers on:**             **(10 x 2 = 20)**

1. Define valves.
2. Mechanisms of heat transfer.
3. Define pulverisation.
4. Applications of size reduction.
5. Types of sieves.
6. Dry and wet bulb temperature.
7. Define dry distillation.
8. What is the use of florentine receiver?
9. Define slurry.
10. Define chemical Hazards.

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**(LQ 4259)**          **FEBRUARY 2020**          Sub. Code: 4259

**B.PHARM. DEGREE EXAMINATION**
**SECOND YEAR**
**PAPER IV – PHARMACEUTICAL TECHNOLOGY**

*Q.P. Code: 564259*

Time: Three hours                              **Maximum: 100 Marks**

**I. Elaborate on:**                                      **(2 x 20 = 40)**

1. Define Corrosion. Explain the types of corrosion. Prevention of corrosion.

2. a) With a neat diagram explain the working of rotary filter.
   b) Write about steam as heating media. Write its advantages.

**II. Write notes on:**                                   **(8 x 5 = 40)**

1. Write the construction and working of check valves.
2. Construction and working of differential manometer.
3. Note on edge filter.
4. Solubility curve in crystallization.
5. Applications of humidity measurement in pharmacy.
6. Construction and working of falling film evaporator.
7. Fluidized bed drying.
8. Colloidal mill.

**III. Short answers on:**                                **(10 x 2 = 20)**

1. Write the grades of stainless steel.
2. What is industrial dermatitis?
3. Define viscosity.
4. Write the principle of reciprocating pump.
5. Characters of crystals.
6. What is Adiabatic cooling?
7. Define calandria.
8. What is volatility in fractionation?
9. Principle of ball mill.
10. Difference between impeller and propeller.

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