

(LO 2037)

MARCH 2019

Sub. Code: 2037

**B.PHARM. DEGREE EXAMINATION
PCI Regulation – SEMESTER III
PAPER IV – PHARMACEUTICAL ENGINEERING**

Q.P. Code: 562037

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Describe the construction, working principle, efficiency, merits and demerits of Fractional distillation.
2. Discuss in detail Ball Mill.
3. Write about the principle, construction, working and application of Freeze dryer.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Describe various types of iron as material of construction.
2. Cyclone Separator.
3. Factors affecting size reduction.
4. Sigma blade Mixer.
5. Describe with a diagram 'Venturimeter'.
6. Forced circulation evaporator.
7. Different Sources of heat.
8. Bernoulli's Theorem.
9. Filter leaf.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Convection.
2. Heat interchangers.
3. Applications of size separation.
4. Centrifugation.
5. What are the standard for sieves?
6. Advantages of plastics.
7. Filter aids.
8. Define Corrosion.
9. Calandria.
10. Double cone blender.

(LP 2037)

SEPTEMBER 2019

Sub. Code: 2037

**B.PHARM. DEGREE EXAMINATION
PCI REGULATION – SEMESTER III
SECOND YEAR
PAPER IV – PHARMACEUTICAL ENGINEERING**

Q.P. Code: 562037

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Explain the principle, construction, working, uses, merits and demerits of Climbing film evaporator.
2. Discuss in detail Filter Press.
3. Explain the theory behind Corrosion. How will you prevent and control Corrosion?

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Rota meter.
2. Concepts of Boundary layer.
3. Write briefly on mechanism of heat transfer.
4. Propellers.
5. Edge runner mill.
6. Stainless steel as the material of pharmaceutical plant construction.
7. Steam distillation.
8. Materials used for plant construction.
9. Super centrifuge.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Turbulent Flow.
2. What are the grades of powder?
3. Write any two factors influencing Filtration.
4. Lyophilisation.
5. Homogenization.
6. Define Filter Aids.
7. Centrifugal effect.
8. What is latent heat?
9. Fourier's Law.
10. Volatility.

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

[LR 0121]

JANUARY 2021

Sub. Code: 2037

(MARCH 2020 EXAM SESSION)

B. PHARMACY DEGREE EXAMINATION

PCI REGULATION – SEMESTER III

PAPER IV – PHARMACEUTICAL ENGINEERING

Q.P. Code: 562037

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions.

(2 x 10 = 20)

1. Describe the construction, working, advantages and disadvantages of Fluidized bed dryer.
2. Explain about details of Steam distillation.
3. Define Corrosion. Explain about type and theories of Corrosion.

II. Write notes on: Answer any SEVEN questions.

(7 x 5 = 35)

1. Orifice meter.
2. Hammer mill.
3. Mechanism of conduction.
4. Silversion emulsifier.
5. Filter leaf.
6. Factors in rate of Evaporation.
7. Any one size Separator.
8. Non Perforated basket centrifuge.
9. Factors affecting in materials for plant construction.

III. Short answers on: Answer ALL questions.

(10 x 2 = 20)

1. Types of Manometers.
2. Method of size reduction.
3. Define Distillation.
4. Equilibrium Moisture Content.
5. Propellers.
6. Heat exchangers.
7. Define Mixing.
8. Classify Filters.
9. Application of Centrifugation.
10. Classify Ferrous metals.

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[BPHARM 0921]

**SEPTEMBER 2021
(SEPTEMBER 2020 EXAM SESSION)**

Sub. Code: 2037

**B.PHARM. DEGREE EXAMINATION
PCI Regulation 2017 – SEMESTER III
PAPER IV - PHARMACEUTICAL ENGINEERING**

Q.P. Code: 562037

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Describe the mechanism and different modes of Stress applied in size reduction. Write the principle, construction and working of Fluid energy mill.
2. Explain the Reynolds experiment & Bernoulli's theorem of fluid flow.
3. Write about the principle, construction, working and application of FBD.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Cyclone Separator.
2. Mechanism of Filtration.
3. Factors affecting size reduction.
4. Planetary mixer.
5. Multiple effects of Evaporator.
6. Glass as the material of Pharmaceutical plant construction.
7. Different sources of Heat.
8. Explain Raoult's law of distillation.
9. Basic of Material handling systems.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Lyophilization.
2. Critical moisture content.
3. Applications of Centrifugation.
4. Fourier's law.
5. What are the standards for Sieves?
6. Comminution.
7. Filter media.
8. Binary mixture.
9. Calandria.
10. Flash distillation.

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[BPHARM 0122]

**JANUARY 2022
(MARCH 2021 EXAM SESSION)**

Sub. Code: 2037

B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)

PCI Regulation 2017 – SEMESTER III

PAPER IV - PHARMACEUTICAL ENGINEERING

Q.P. Code: 562037

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Define Filtration. Write in detail about Plate and Frame filter press.
2. Explain about separation of mixture of components by fractional distillation using boiling point composition diagrams.
3. Define Evaporation. Discuss about climbing film evaporator.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Operational details of Ball mill.
2. Rotary drum filter.
3. Spray dryer.
4. Silverson – Mixer emulsifier.
5. Stainless steel as material of plant construction.
6. Cyclone separator.
7. Orificemeter.
8. Factors influencing corrosion.
9. Rotameter.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Define Elutriation.
2. Various grades of Powders.
3. Darcy's law.
4. Give suitable dryers for obtaining:
(i) Granular free flowing solids and (ii) Sticky pastes.
5. Factors affecting Evaporation.
6. Define Rectifying columns.
7. Mechanisms of Solid mixing.
8. Stefan-Boltzmann law.
9. Uses of Plastics.
10. Applications of Distillation.

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[BPHARM 0522]

**MAY 2022
(SEPTEMBER 2021 EXAM SESSION)**

Sub. Code: 2037

**B.PHARM. DEGREE EXAMINATION
PCI Regulation 2017 – SEMESTER III
PAPER IV - PHARMACEUTICAL ENGINEERING**

Q.P. Code: 562037

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Explain the principle, construction, working and applications of orifice meter.
2. Explain principle construction and working of Silverson Emulsifier with neat Diagram.
3. Explain in brief about types of corrosion and their prevention method.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Reynolds number
2. Explain in brief about ball mill with diagram.
3. Air separator
4. Explain the principle and working of a heat interchanger with a labeled diagram
5. Explain in brief about multiple effect evaporators and its economy.
6. Differentiate simple distillation with fractional distillation
7. Brief note on drying rate curve with explanation of each phase
8. Briefly explain in detail about drum filter.
9. Factors influencing selection of materials for plant construction

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Applications of size reduction
2. Labeled diagram of cyclone separator
3. Merits and demerits of Radiation method
4. Differentiate between evaporation and distillation
5. Types of fractionating columns
6. Types of dryers
7. Objectives of mixing
8. Factors influencing filtration
9. Applications of centrifugation
10. Advantages of Non-metals in pharmaceutical plant construction

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[BPHARM 1022]

**OCTOBER 2022
(MARCH 2022 EXAM SESSION)**

Sub. Code: 2037

B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)

PCI Regulation 2017 – SEMESTER III

PAPER IV - PHARMACEUTICAL ENGINEERING

Q.P. Code: 562037

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Explain in detail the methods of heat transfer and its applications.
2. Draw the diagram, principle, working and its applications of steam distillation.
3. Define Evaporation and Factors affecting evaporation.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Discuss the theories of drying.
2. Bernoulli's Theorem.
3. Forced circulation evaporator.
4. Discuss the theories involved in the fluid flow.
5. Fluidized bed drier.
6. Discuss the theories involved in the corrosion.
7. Write in detail the double cone blender.
8. Principle involved in the Centrifugation.
9. Factors affecting size reduction.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Manometer.
2. Reynolds number.
3. Stefan-Boltzman law.
4. Equilibrium Moisture Content.
5. Lyophilization.
6. Galvanic cell.
7. Super Centrifuge.
8. Filter Aids
9. Types of corrosion.
10. Types of mixtures.

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[B.PHARM 0323]

**MARCH 2023
(SEPTEMBER 2022 EXAM SESSION)**

Sub. Code: 2037

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)
PCI Regulation 2017 – SEMESTER III
PAPER IV - PHARMACEUTICAL ENGINEERING**

Q.P. Code: 562037

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Discuss in detail Filter Press.
2. Write about the principle, construction, working and application of Fluidized bed dryer.
3. Explain the laws governing size reduction and Discuss in detail Ball Mill.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Mechanism of heat transfer.
2. Horizontal tube evaporator.
3. Steam distillation.
4. Factors affecting size reduction.
5. Double cone blender.
6. Bernoulli's Theorem.
7. Rotometer.
8. Rate of drying curve.
9. Principles of centrifugation.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Venturimeter.
2. Heat interchanger.
3. Filter aids.
4. Types of corrosion.
5. Reynolds number.
6. Super centrifuge.
7. Calandria.
8. Stephen Boltzmann constant.
9. Global humidity Index.
10. Types of propellers.
