Code: BP304T

R19

B.Pharm II Year I Semester (R19) Regular Examinations March 2023

PHARMACEUTICAL ENGINEERING

(For 2021 Regular & 2022 Lateral entry admitted batches only)

Time: 3 hours | Max. Marks: 75

PART – A

(Compulsory Question)

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1		Answer the following: (10 X 02 = 20 Marks)	
	(a)	What are objectives of size reduction?	2M
	(b)	Write the official standards of sieves.	2M
	(c)	How heat is transferred by Radiation?	2M
	(d)	What is the objective in heat transfer?	2M
	(e)	Write the objective of Mixing.	2M
	(f)	Write the uses of Tray dryer.	2M
	(g)	Write the merits and de-merits of Meta filter.	2M
	(h)	What are all uses of Filter leaf?	2M
	(i)	Write any four physical factors in material selection for pharmaceutical plant construction.	2M
	(j)	Brief on Tin plate.	2M

PART – B

(Answer any two questions: 02 X 10 = 20 Marks)

2	(a)	Explain the principle, construction, working and uses of Hammer mill.	5M
	(b)	Explain the principle, construction, working and uses of sieve shaker.	5M
3		Discuss in detail Fractional distillation.	10M
4	(a)	Explain the principle, construction and working of Propeller mixer	5M
	(b)	Explain the principle, construction and working of Turbine mixer.	5M

PART – C

(Answer any seven questions: 07 X 05 = 35 Marks)

5	Write a note the principle, construction, working and uses of Elutriation Tank.	5M
6	What is Reynolds number and write its significance?	5M
7	Explain the Molecular distillation process of falling film molecular still.	5M
8	Write short notes on the principle, construction, working and uses of Forced circulation evaporator.	5M
9	Briefly explain on mechanism of Liquid mixing.	5M
10	Write the principle, construction and working principle of Vacuum dryer.	5M
11	Write the principle, construction and working principle of Rotary drum filter.	5M
12	Write short notes on principles of Centrifugation.	5M
13	Write short notes on Copper and its alloys.	5M

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Code: BP304T

R19

B.Pharm II Year I Semester (R19) Supplementary Examinations August 2021

PHARMACEUTICAL ENGINEERING

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) What is Reynolds's number?
(b) What is the fundamental principle on which size separation is done?
(c) Which method of heating is best suited for volatile materials?
(d) How is simple distillation different from flash distillation?
(e) What are the pharmaceutical applications of drying?
(f) How density affects efficiency of mixing?
(g) What are filter aids? Name various filter aids.
(h) What are the various components of centrifugal force?
(i) What are the factors which affect corrosion?
(j) What are the properties of materials used in flooring?

PART – B

(Answer any two questions: 02 X 10 = 20 Marks)

2 (a) What are the various theories and types of corrosion?
(b) Which type of metals are more prone to corrosion and why?

3 (a) What are the various stages of solid and liquid mixing?
(b) Explain with diagram one liquid mixer and one solid mixer.

4 (a) What are the various theories of heat transfer?
(b) What is the mechanism on which heat interchangers and heat exchangers function?

PART – C

(Answer any seven questions: 07 X 05 = 35 Marks)

5 (a) How loss of energy can be minimized during flow?
(b) What are the applications of Bernoulli's theorem?

6 (a) How based on the properties of material to be filtered and the type of filters are selected for the filtration process?
(b) Explain the cartridge filter with suitable diagram.

7 (a) How are the powders characterized? What are the pharmacopoeial standards for the same?
(b) What is the principle on which a cyclone separator function?

8 (a) What are the factors which affect centrifugation?
(b) Compare the functioning of semi-continuous centrifuge and super centrifuge.

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Code: BP304T

R19

B.Pharm II Year I Semester (R19) Regular & Supplementary Examinations April 2022

PHARMACEUTICAL ENGINEERING

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Define Reynolds number.
(b) Write objective of size separation.
(c) Give the mechanism of heat transfer.
(d) What are the factors influencing evaporation?
(e) Write short notes on spray dryers.
(f) Write merits and demerits of double cone blender.
(g) Define filter media.
(h) Give the applications of centrifugation.
(i) Define corrosion.
(j) Write the advantages of plastics.

PART – B

(Answer any two questions: 02 X 10 = 20 Marks)

2 Write in detail about construction, working, uses, merits and demerits of plate and frame filter.

3 Explain with neat diagram: (i) Orifice meter. (ii) Venturimeter.

4 Explain principle, construction, working, merits and demerits of cyclone separator with neat labelled diagram.

PART – C

(Answer any seven questions: 07 X 05 = 35 Marks)

5 Explain principle, working and application of bag filter.

6 Write in detail about twin shell blender.

7 Explain in detail about steam jacketed kettle.

8 Discuss the objectives and applications of heat transfer.

9 Explain in details about liquid mixing with neat labelled diagram.

10 Write in detail about filter aids.

11 Explain principle, construction, working of non-perforated basket centrifuge.

12 Explain the role of stainless steel in materials of plant construction.

13 Write in detail about material handling systems.

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Code: BP304T

R19

B.Pharm II Year I Semester (R19) Supplementary Examinations September 2022

PHARMACEUTICAL ENGINEERING

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) What is Bernoulli's theorem?
(b) Write the objective of size reduction.
(c) Define Fourier's law.
(d) Define steam distillation.
(e) Name dryer used in pharmaceutical industries.
(f) Define mixing.
(g) Write a note on the filter aids.
(h) What is super centrifuge?
(i) Write grades of stainless steel.
(j) Give the advantages of glass in plant construction.

PART – B

(Answer any two questions: 02 X 10 = 20 Marks)

2 Explain various industrial hazards and explain methods to prevent it.

3 Enumerate the construction and working of freeze dryer.

4 Write in detail about principle, construction and working of rotary drum filter.

PART – C

(Answer any seven questions: 07 X 05 = 35 Marks)

5 Explain construction and working of hammer mill.

6 Explain rotameter with neat labelled diagram.

7 Describe the construction, working of film evaporator.

8 Write a note about fractional distillation.

9 Explain planetary mixer with neat diagram.

10 Explain advantages and disadvantages of fluidized bed dryer.

11 What are the factors affecting filtration?

12 Explain construction, working principle of perforated basket centrifuge.

13 Define corrosion. Explain types of corrosion.

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Code: 15R00301

R15

B.Pharm II Year I Semester (R15) Supplementary Examinations September 2022

PHARMACEUTICAL ENGINEERING

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Write a note on equilibrium state.
(b) Write the salient features of conveyor.
(c) Write a note on adiabatic saturation temperature.
(d) Write the principle and applications of air-conditioning.
(e) Define crystallization and crystal habit.
(f) Define and write the applications of centrifugation.
(g) Write a note on Rittinger's law of size reduction.
(h) What is sieve shaker and give its applications.
(i) What is automated process control system?
(j) Classify types of reactors.

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2 (a) Describe the principle and working of orifice meter.
(b) Write a note on turbine pump.

OR

3 (a) Explain principle, construction and working of venturimeter.
(b) Write a detailed note on mechanism and prevention and control of corrosion.

4 Discuss in detail about psychrometric chart.

OR

5 Explain the principle, construction and applications of fluid bed dryer.

6 Describe the principle, construction, working and applications of Swenson Walker crystallizer.

OR

7 (a) Explain the factors affecting filtration.
(b) Describe the principle, construction, advantages & disadvantages of perforated basket centrifuge.

8 Illustrate the principle, construction, working and applications of fluid energy mill with neat diagram.

OR

9 Explain in detail about Silverson mixer.

10 Discuss in detail about process variables in automated process control systems.

OR

11 Describe in detail about computer aided manufacturing and its applications.

*****

Code: 15R00301

R15

B.Pharm II Year I Semester (R15) Supplementary Examinations September 2022

PHARMACEUTICAL ENGINEERING

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following (10 X 02 = 20 Marks)

(a) Write a note on equilibrium state.
(b) Write the salient features of conveyor.
(c) Write a note on adiabatic saturation temperature.
(d) Write the principle and applications of air-conditioning.
(e) Define crystallization and crystal habit.
(f) Define and write the applications of centrifugation.
(g) Write a note on Rittinger's law of size reduction.
(h) What is sieve shaker and give its applications.
(i) What is automated process control system?
(j) Classify types of reactors.

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2 (a) Describe the principle and working of orifice meter.
(b) Write a note on turbine pump.

OR

3 (a) Explain principle, construction and working of venturimeter.
(b) Write a detailed note on mechanism and prevention and control of corrosion.

4 Discuss in detail about psychrometric chart.

OR

5 Explain the principle, construction and applications of fluid bed dryer.

6 Describe the principle, construction, working and applications of Swenson Walker crystallizer.

OR

7 (a) Explain the factors affecting filtration.
(b) Describe the principle, construction, advantages & disadvantages of perforated basket centrifuge.

8 Illustrate the principle, construction, working and applications of fluid energy mill with neat diagram.

OR

9 Explain in detail about Silverson mixer.

10 Discuss in detail about process variables in automated process control systems.

OR

11 Describe in detail about computer aided manufacturing and its applications.

*****

Code: 15R00301

R15

B.Pharm II Year I Semester (R15) & (LC) Supplementary Examinations April 2022

PHARMACEUTICAL ENGINEERING

(For R09 & R13 readmitted R15)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Define fluid flow.
(b) Define corrosion.
(c) Write the applications of air conditioner.
(d) What is the use of dew point in determination of humidity?
(e) What is filter aid?
(f) What are all the different shapes of crystals?
(g) What is the principle of hammer mill?
(h) Write the four steps involved in mixing of solid-solid.
(i) How will you classify process pressure measuring devices?
(j) What is pyrometer?

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2 Explain the venture meter with diagram.

OR

3 Write the factors involved in the corrosion.

4 Write in detail measurement of humidity.

OR

5 Give an account on climbing film evaporator with neat diagram.

6 Write a detail note on edge filter.

OR

7 Write a detail note on rotary filter.

8 Briefly explain on fluid energy mill.

OR

9 Explain about planetary mixer.

10 Briefly explain level measurement by float actuated devices & magnetic coupled devices.

OR

11 Write the role of computer in manufacturing process control.

*****

Code: 15R00301

R15

B.Pharm II Year I Semester (R15) Supplementary Examinations March 2021

PHARMACEUTICAL ENGINEERING

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Describe viscosity and how does it influence the pattern of flow.
(b) Classify corrosion and describe its triggering factors.
(c) How loss on drying is calculated? Where is it used in pharmaceutical industry?
(d) How does humidity affect the stability of pharmaceutical products?
(e) How crystal shapes influence the physico-chemical characteristics of the drug?
(f) What is the role of pressure in filtration process? How can it be regulated?
(g) How the choice of mill made is based on the material properties?
(h) What is the principle of operation of a twin-shell mixer?
(i) What is a batch process? What are the drawbacks of a batch process in reference to an continuous process?
(j) Define control limits. How are control limits determined for a process?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) What do you understand by unit operations? Using a flow chart of an industrial process, show the application of various unit operations in the process.
(b) How can corrosion be prevented and controlled?

OR

3 (a) What is laminar flow and turbulent flow? How can these flows be mathematically represented?
(b) With the help of a diagram, explain the working of a reciprocating pump.

UNIT – II

4 (a) What is HEPA filtration system? Why is it required in pharmaceutical plants?
(b) Draw and explain the working of fluidized bed dryer.

OR

5 (a) Define wet bulb and adiabatic saturation temperature? Explain any one instrument which is used in dehumidification.
(b) Define the principle and mechanism of lyophilization.

UNIT – III

6 (a) Briefly explain the Miers supersaturation theory.
(b) Explain the principle of centrifugation and its applications.

OR

7 (a) Explain the mechanism of air filtration. Which instruments are used for the same?
(b) What is nucleation? Classify the various types of crystallizers.

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Code: BP304T

R19

B.Pharm II Year I Semester (R19) Regular Examinations March 2021

PHARMACEUTICAL ENGINEERING

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) What is a venturimeter? What is its use?
(b) How size of particles affects formulation properties?
(c) In which kind of materials, is radiation based method of heat transfer used?
(d) What is a bone dry material?
(e) What is the difference between steam distillation and molecular distillation?
(f) What is the mechanistic difference between drying and evaporation?
(g) What is demixing and what factors trigger demixing?
(h) What are the rate limiting factors in the method of filtration?
(i) Which forces play a major role in centrifugation process?
(j) How can be corrosion prevented?

PART – B

(Answer any two questions: 02 X 10 = 20 Marks)

2 (a) What are the factors which are considered during the construction of pharmaceutical plants?
(b) Briefly explain the basics of material handling systems.

3 (a) Write a note on mechanism of mixing of solids, liquids and semi-solids.
(b) Explain the working of sigma blade mixer and planetary mixer with a suitable diagram.

4 (a) Explain the mechanism of drying with a help of drying curve. Define vapour pressure.
(b) What is the principle and functioning of freeze drying process?

PART – C

(Answer any seven questions: 07 X 05 = 35 Marks)

5 (a) What is the theory of filtration?
(b) Enlist various filter types and the basis of their selection based on material type.

6 (a) What are the instruments used to measure the flow of fluids?
(b) What is the theory and application of Reynolds number?

7 (a) What are the objectives and principle of size reduction?
(b) What are the merits and demerits of hammer mill and ball mill?

8 (a) How various sizes of powders can be used as an advantage in the preparation of dosage forms?
(b) Write a note on the air based method of size separation.

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