P. organic chemistry - II

Code No.: H-8134/PCI

FACULTY OF PHARMACY

B. Pharmacy (PCI) III Semester (Main & Backlog) Examination, February/March 2026

Subject: Physical Pharmaceutics I

Time: 3 Hours **Max. Marks: 75**

PART – A

Note: Answer all the questions. **(10 x 2 = 20 Marks)**

1. Write a note on Phase rule.
2. What are different solubility expressions.
3. Give examples of Eutectic mixtures.
4. Define polymorphism.
5. Differentiate surface tension and interfacial tension.
6. Depict Griffin HLB scale.
7. Explain protein binding.
8. Write a note on crystalline structures of complexes.
9. What are hypertonic and hypotonic solutions.
10. Write Buffer Equation.

PART B

Note: Answer any two questions. **(2 x 10= 20 Marks)**

11. Describe determination and application of Optical rotation and Dielectric constant.
12. Write a note on Adsorption at solid interface.
13. Classify Complexation. Write a note on Inclusion complexes.

PART C

Note: Answer any seven questions. **(7 x 5= 35 Marks)**

14. Describe factors influencing Solubility of drugs.
15. Write a note on Partially miscible liquids with examples.
16. Describe Capillary rise method for determination of Surface tension.
17. Explain Spreading coefficient and surface free energy.
18. What is dissociation constant and how to determine it?
19. Write the applications of complexation in pharmacy.
20. What is buffer capacity of solution containing 0.2M acetic acid and 0.1M sodium acetate
21. Write a note on thermodynamic treatment of stability constants.
22. How do you measure pH using hydrogen electrode.

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Code No: H-8135/PCI

FACULTY OF PHARMACY

B. Pharmacy (PCI) III – Semester (Main & Backlog) Examination,
February/March 2026

Subject: Pharmaceutical Microbiology

Time: 3 Hours **Max. Marks: 75**

PART – A

Note: Answer All the Questions. **(10 x 2 = 20 Marks)**

1. Enlist the types of media used in microbiology lab.
2. Explain the contribution of Robert Koch in the field of microbiology
3. Define Sterilization and Disinfection.
4. Write the principle involved in Indole production test.
5. Draw the typical structure of Fungi.
6. Define Antiseptic, Disinfectant, inhibition and Bactericide.
7. What is aseptic area?
8. Write about media used in animal cell culture.
9. Write any 4 applications of animal cell culture in pharmaceutical industry.
10. What is the difference between a bacteria & virus.

PART – B

Note: Answer any Two Questions. **(2 x 10 = 20 Marks)**

11. What is growth? Explain different phases of growth in bacteria and synchronous growth.
12. Explain in detail about chemical and radiation methods of sterilization
13. Write in detail about preservation of pharmaceutical products using antimicrobial agents.

PART – C

Note: Answer any Seven questions **(7 x 5 = 35 Marks)**

14. Draw a neat labeled diagram of bacteria and explain its parts.
15. Explain the working procedure of electron microscopy.
16. Write the differences between simple staining and negative staining.
17. Write the procedure to assess new antibiotic.
18. Explain principle and procedure of microbiological assay of antibiotics by turbidimetric method.
19. Explain about equipment employed in large scale sterilization.
20. Write about nutritional requirements of bacteria.
21. Write the principle and procedure of gram staining technique.
22. Explain replication in animal cell viruses

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Code No.: H-8136/PCI

FACULTY OF PHARMACY

B. Pharmacy (PCI) III Semester (Main & Backlog) Examination, February/March 2026

Subject: Pharmaceutical Engineering

Time: 3 Hours **Max. Marks: 75**

PART – A

Note: Answer all the questions. **(10 x 2 = 20 Marks)**

1. Write the equation used to determine the Reynolds number and explain each term involved.
2. Define size reduction and discuss its significance.
3. Explain the terms conduction and convection with suitable examples.
4. Define distillation and mention its applications.
5. State the importance of the drying rate curve.
6. List the factors that influence mixing.
7. What is a filter aid? Describe its importance.
8. Enumerate the factors that affect centrifugation.
9. Give the classification of materials used for plant construction.
10. Mention any two methods used to prevent or control corrosion.

PART B

Note: Answer any two questions. **(2 x 10= 20 Marks)**

11. Explain the principle, construction, working, and applications of a freeze dryer.
12. Describe the construction, working principle, advantages, and disadvantages of a plate and frame filter press equipped with a washing facility.
13. Discuss the factors influencing the selection of materials for pharmaceutical plant construction.

PART C

Note: Answer any seven questions. **(7 x 5= 35 Marks)**

14. Explain the construction and working of a simple manometer with a neat, labelled diagram.
15. Describe the construction and working of a falling film evaporator, supported by a neat sketch.
16. Explain the principle and construction of a double cone blender with a neat diagram.
17. Classify centrifuges and describe the construction and working of a perforated basket centrifuge.
18. Explain the preparation process of Water for Injection (WFI).
19. Discuss the application of Kozeny's equation in the process of filtration.
20. Describe the principle, construction and working of a bag filter.
21. Explain the construction and working of a drum dryer.
22. State and explain the laws governing size reduction.

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Code No.: H-8133/PCI

FACULTY OF PHARMACY

B. Pharmacy (PCI) III Semester (Main & Backlog) Examination, February/March 2026

Subject: Pharmaceutical Organic Chemistry-II

Time: 3 Hours **Max. Marks: 75**

PART – A

Note: Answer all the questions. **(10 x 2 = 20 Marks)**

1. Explain Friedel-Crafts alkylation of benzene with an example.
2. Write the structure & uses of Resorcinol.
3. Define Iodine value and give its significance.
4. Define polynuclear aromatic hydrocarbons with examples.
5. Write the structure and uses of tripenylmethane.
6. Explain activating & deactivating group with example.
7. Write the difference between oils & fats.
8. Define o/p and m-directing group with examples.
9. Write any two qualitative tests for phenol?
10. Explain the limitations of Baeyer's strain theory

PART B

Note: Answer any two questions. **(2 x 10= 20 Marks)**

11. a) Explain the acidity of aromatic carboxylic acids with special emphasis on the effect of substituents on their acidity.
    b) Write about the Reimer-Tiemann reaction of phenols.
12. Explain electrophilic substitution reactions of benzene with examples
13. Explain principle and significance of Saponification value and Reichert Meissl (RM) value

PART C

Note: Answer any seven questions. **(7 x 5= 35 Marks)**

14. Define the terms aromaticity & resonance. Explain in detail about Huckel's rule.
15. Write the short note on Coulson and Moffitt's modifications
16. Explain the reactions of benzoic acid.
17. Explain the reactions of cyclopropane & cyclobutane.
18. Explain the electrophilic substitution reactions of Naphthalene.
19. Explain rancidity and drying of oils
20. Define acid value. Describe its significance and determination.
21. Write the synthetic applications of aryl diazonium salts
22. Write the preparation and electrophilic substitution reactions of anthracene.

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Code No: G-13235/PCI

FACULTY OF PHARMACY

B. Pharmacy (PCI) III - Semester (Backlog) Examination, October 2025

Subject: Pharmaceutical Engineering

Time: 3 Hours **Max. Marks: 75**

PART - A

Note: Answer all the questions. **(10 x 2 = 20 Marks)**

1. Define different modes of heat transfer.
2. Enlist the merits and demerits of ball mil.
3. Write the mechanisms of size Separation.
4. Differentiate between evaporation and distillation.
5. Write the principle of Steam distillation.
6. List objectives and applications of mixing.
7. Write the factors affecting size reduction.
8. Write the applications of filtration.
9. Mention the galvanic theory of corrosion
10. Classify the metals as materials for plant construction.

PART – B

Note: Answer any two questions. **(2 x 10 = 20 Marks)**

11. Describe energy losses during fluid flow and write the construction, working principle of Venturi meter.
12. Explain the concept of mixing and write its importance in construction working of double cone blender.
13. Write the factors affecting corrosion and describe the methods to prevent it.

PART – C

Note: Answer any seven questions. **(7 x 5 = 35 Marks)**

14. Explain the laws applicable to size reduction.
15. Describe the construction and working of a Simple manometer.
16. Compare and contrast cyclone separator and air separator.
17. Explain the factors influencing filtration.
18. Write working principle of spray drier with merits and demerits.
19. Write construction and working principle of sigma blade mixer with the help of diagram.
20. Describe the working principle, merits and demerits of filter press.
21. Write the construction and working principle of Super centrifuge.
22. Explain the material characteristics, advantages and disadvantages of ferrous metals for plant construction.

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Code No. G-13232/PCI

FACULTY OF PHARMACY

B. Pharmacy (PCI) III - Semester (PCI) (Backlog) Examination, September 2025
Subject: Pharmaceutical Organic Chemistry-II

Time: 3 Hours **Max. Marks: 75**

PART – A

Note: Answer all the questions. **(10 x 2 = 20 Marks)**

1. Write the structure and uses of BHC.
2. Define Iodine value and write its significance.
3. What is rancidity of oils
4. Write the mechanism of Friedel craft acylation.
5. Explain ring activators and deactivators with examples.
6. Write the structure & uses of Resorcinol
7. Define Aryl Diazonium salts and Write their method of preparation.
8. Write the structure and uses of Anthracene
9. Define angle strain. Explain the reasons for the same
10. Write any two reactions of Cyclopropane

PART – B

Note: Answer any two questions. **(2 x 10 = 20 Marks)**

11. Explain the stability of cycloalkanes with the help of Bayer strain theory and orbital picture of angle strain.
12. What are Electrophilic aromatic substitution reactions? Discuss the reaction and mechanism involved in Nitration and sulphonation of benzene.
13. Explain principle and significance of Saponification value and Reichert Meissl(RM) value

PART – C

Note: Answer any seven questions. **(7 x 5 = 35 Marks)**

14. Explain acidity of aromatic acids. Discuss the effect of electron donating substituents on the acidity of aromatic acids
15. Explain the hydrolysis and hydrogenation reactions of oils
16. Explain acidic nature of phenols. Discuss the effect of electron withdrawing substituents on the acidity of phenol.
17. Define acetyl value. Describe its significance and determination.
18. Describe the evidences in derivation of structure of benzene.
19. Write the preparation and electrophilic substitution reactions of Naphthalene
20. Write the Synthetic applications of Aryl Diazonium salts.
21. Write in detail about Qualitative tests for Phenols
22. Write the structure and uses of a) DDT b) Saccharin c) Cresol d) Diphenyl methane e) Naphthol

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Code No: G-13233/PCI

FACULTY OF PHARMACY

B. Pharmacy (PCI) III - Semester (Backlog) Examination, September 2025

Subject: Physical Pharmaceutics- I

Time: 3 Hours **Max. Marks: 75**

PART - A

Note: Answer all the questions. **(10 x 2 = 20 Marks)**

1. Define solubility.
2. State the phase rule.
3. Write a note on eutectic mixtures.
4. What is dipole moment? Write its applications.
5. What is interfacial tension?
6. Write a note on solubilization.
7. What is complexation? Write its applications.
8. Write a note on Sorenson's pH scale.
9. What is isotonicity?
10. Write a note on Hypertonic or Hypotonic solutions.

PART - B

Note: Answer any two questions. **(2 x 10 = 20 Marks)**

11. (a) What is polymorphism? Write the applications of Polymorphism.
    (b) Write the determination and applications of Refractive index and Dissociation constant.

12. (a) Write the methods for determination of surface tension.
    (b) Write a note on HLB scale and its applications.

13. (a) Write the applications of buffers in pharmaceutical and biological systems.
    (b) Write a note on measurement of pH using hydrogen electrode.

PART - C

Note: Answer any seven questions **(7 x 5 = 35 Marks)**

14. Write briefly the factors influencing on solubility of drugs.
15. Write a note on solubility of liquids in liquids and gases in liquids.
16. What is Polymorphism? Write about polymorphism and its importance.
17. Write a note on a) Changes in states of matter b) Liquid crystals.
18. Write a note on HLB Scale and its applications.
19. Write about the crystalline structure of complexes.
20. What is protein binding? Write the importance of protein binding.
21. What is buffer capacity? Write Van-Slyke's equation for buffer capacity and maximum buffer capacity.
22. Write a note on buffer equation and buffer capacity.

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Code No. G-13088/PCI

FACULTY OF PHARMACY

B. Pharmacy III - Semester (PCI) (Main & Backlog) Examination, March 2025
Subject: Pharmaceutical Microbiology

Time: 3 Hours **Max. Marks: 75**

PART – A

Note: Answer all the questions. **(10 x 2 = 20 Marks)**

1. Write the composition of nutrient broth and Nutrient agar medium.
2. Write about Koch's postulates.
3. Write about cultural characteristics of bacteria in liquid and solid media.
4. Describe mechanism of action of phenols as disinfectants?
5. Draw the typical structure of bacterial virus with a neat labeled diagram?
6. Explain the purpose of sterility testing of pharmaceutical products.
7. Write a note on autoclave?
8. Write a note on methyl red test?
9. Explain the working procedure of Micromanipulator.
10. Define Primary established and transformed cells.

PART – B

Note: Answer any two questions. **(2 x 10 = 20 Marks)**

11. Explain about Isolation and preservation of pure cultures.
12. Explain evaluation of efficacy of sterilization methods.
13. Explain different sources of contamination in aseptic area and methods of prevention.

PART – C

Note: Answer any seven questions. **(7 x 5 = 35 Marks)**

14. Write the differences between prokaryotes and eukaryotes.
15. Explain about phase contrast microscopy with neat labeled diagram.
16. Write about sterility indicators.
17. Explain the principle involved in laminar flow unit.
18. Explain principle and procedure of microbiological assay of antibiotics by diffusion method.
19. Write the methods of enumeration of bacteria.
20. Explain the general procedure of animal cell culture.
21. Write about cultivation of anaerobic bacteria.
22. Explain synchronous growth curve and normal growth curve of bacteria.

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Code No. G-13086/PCI

FACULTY OF PHARMACY

B. Pharmacy III - Semester (PCI) (Main & Backlog) Examination, March 2025
Subject: Pharmaceutical Organic Chemistry-II

Time: 3 Hours **Max. Marks: 75**

PART – A

Note: Answer all the questions. **(10 x 2 = 20 Marks)**

1. Give the structure and uses of Chloramine.
2. What is Aromatic character and explain with an example.
3. Explain the significance of Aryl diazonium salt.
4. Give the structure and uses of Diphenyl methane.
5. Explain the significance of RM value.
6. Write about drying oils.
7. Give a note on acidity of Benzoic acid.
8. Give the structure and uses of Phenanthrene.
9. Write two reactions of cyclobutane.
10. What are the causes for rancidity of oils.

PART – B

Note: Answer any two questions. **(2 x 10 = 20 Marks)**

11. Explain why phenols are more acidic than alcohols.and emphasize the effect of substituents on acidity of phenols.
12. Discuss in detail the effect of substituents on reactivity and orientation of monosubstituted Benzenes.
13. a). Explain Baeyers angle strain theory with its limitations.
    b). Define Iodine value. Describe its significance and determination.

PART – C

Note: Answer any seven questions. **(7 x 5 = 35 Marks)**

14. Explain Friedel crafts acylation and its limitations.
15. Discuss about qualitative tests for Phenols.
16. Explain the method of preparation of Anthracene.
17. Write about any 3 chemical reactions of Fatty acids.
18. Discuss about Sachse mohrs theory.
19. Give the chemical reactions of Benzoic acid.
20. Give a note on Basicity of Aromatic amines.
21. Explain the reaction and mechanism of Halogenation of Benzene.
22. Discuss the chemical reactions of Naphthalene.

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Code No. G13089/PC

FACULTY OF PHARMACY

B. Pharmacy (PCI) III - Semester (Main & Backlog) Examination, March 2025

Subject: Pharmaceutical Engineering

Time: 3 Hours **Max. Marks: 75**

PART – A

Note: Answer all the questions. **(10 x 2 = 20 Marks)**

1. Mention the different mechanisms of size reduction.
2. List the critical parameters in working of ball mill.
3. What is Reynolds's number and mentions its significance.
4. Write Stefan Boltzmann law along with terms in it.
5. Write merits and demerits of simple distillation unit.
6. Mention the problems in liquid mixing.
7. What is filter medium and write its importance?
8. Write the factors affecting centrifugation.
9. Differentiate between centrifugation and filtration.
10. Define Corrosion.

PART – B

Note: Answer any two questions. **(2 x 10 = 20 Marks)**

11. Write the importance of heat transfer. Explain the differences in construction and working of heat exchanger and heat interchanger.
12. What are Rectification towers and mention their significance in construction and working of fractional distillation unit.
13. Explain the material characteristics, merits and demerits of metals as material for plant construction.

PART – C

Note: Answer any seven questions. **(7 x 5 = 35 Marks)**

14. Explain the critical factors applicable to hammer mill working and mention its merits and demerits.
15. Write construction and working of any one manometer.
16. Describe the principle of size separation and merits & demerits of elutriation tank.
17. Explain the forced film evaporator and its merits.
18. Explain the equipment and functioning of drum drier.
19. Describe construction and working of filter leaf.
20. Write the subsystems, mechanism of working in semisolid mixing equipment.
21. Describe non perforated basket centrifuge with the help of a diagram.
22. Explain the factors influencing selection of plant materials.

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Code No. G-13087/PCI

FACULTY OF PHARMACY

B. Pharmacy (PIC) III - Semester (Main & Backlog) Examination, March 2025
Subject: Physical Pharmaceutics – I

Time: 3 Hours **Max. Marks: 75**

PART – A

Note: Answer all the questions. **(10 x 2 = 20 Marks)**

1. Write the phase rule.
2. Write a note on critical solution temperature.
3. Write a note on liquid crystals.
4. Write the difference between crystalline state and amorphous.
5. Write a note on eutectic mixtures.
6. Write a note on solubilization and detergency.
7. What is surface tension? Write examples.
8. Write a note on crystalline structures of complexes.
9. Write a note on isotonic solutions.
10. What is a buffer? Write its applications in pharmaceutical formulations.

PART – B

Note: Answer any two questions. **(2 x 10 = 20 Marks)**

11. (a) What is polymorphism? Write the applications of Polymorphism.
    (b) Write the determination and applications of Refractive index and Pka.
12. (a) Write the methods for determination of surface tension.
    (b) Write a note on HLB scale and its applications.
13. (a) How do you measure pH using hydrogen electrode?
    (b) What is buffer capacity? Write Vanslyke's equation for buffer capacity and maximum buffer capacity.

PART – C

Note: Answer any seven questions. **(7 x 5 = 35 Marks)**

14. Write a note on quantitative approach to the factors influencing solubility of drugs.
15. What is critical solution temperature? Write its applications.
16. Explain distribution law and it's applications.
17. Write a note on Raoult's law and real solutions.
18. Define protein binding. Explain its significance.
19. What is complexation? Write the crystalline structure of complexes.
20. Write the applications of complexation in pharmacy.
21. How to determine the pH of solution and add a note on Sorenson's pH scale.
22. Write a note on pharmaceutical buffers with examples.

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