JHARKHAND Rai University
RANCHI

PRACTICE SET FOR SUBJECTIVE QUESTIONS
End Semester (Semester III) Examination, Dec-2025

Program: B. Pharm
Subject: Pharmaceutical Organic Chemistry -II
Subject Code: BP301T

Unit I			
S No.	**Questions**	**CO**	**Bloom's Taxonomy Level**
Section II			**Questions for 5 marks**
1	Write a short note on the orbital picture and resonance in benzene.	CO1	Understand
2	Discuss Huckel's rule of aromaticity with examples.	CO1	Apply
3	Explain the mechanism of nitration of benzene.	CO1	Understand
4	What are the limitations of Friedel–Crafts alkylation?	CO1	Remember
5	Discuss the effect of electron-donating groups on reactivity and orientation in electrophilic substitution.	CO1	Analyze
6	Write the structure and uses of DDT and Saccharin.	CO1	Remember
Section III			**Questions for 10 marks**
7	Explain the mechanism and reactivity of halogenation, sulphonation, and nitration reactions of benzene.	CO1	Understand
8	Discuss in detail the effect of substituents on reactivity and orientation in monosubstituted benzene derivatives.	CO1	Analyze
9	Compare Friedel–Crafts alkylation and acylation reactions with mechanisms and limitations.	CO1	Understand
10	Write the structure, synthesis, and medicinal uses of DDT, BHC, Saccharin, and Chloramine.	CO1	Remember
Unit II			
S No.	**Questions**	**CO**	**Bloom's Taxonomy Level**
Section II			**Questions for 5 marks**
11	Discuss the acidity of phenols and factors affecting it.	CO2	Understand
12	Describe qualitative tests used for the identification of phenols.	CO2	Analyze
13	Write the structure and uses of phenol, cresols, and resorcinol.	CO2	Apply
14	Explain the basicity of aromatic amines and the effect of substituents.	CO2	Understand
15	Write short notes on aryl diazonium salts and their importance in synthesis.	CO2	Apply
16	Discuss the acidity of benzoic acid.	CO2	Analyze

17	Explain how substituents affect the acidity of aromatic acids.	CO2	Evaluate
Section III			**Questions for 10 marks**
18	Explain the mechanism of formation and synthetic uses of aryl diazonium salts.	CO2	Understand
19	Discuss the structure, properties, and uses of phenols and their derivatives.	CO2	Remember
20	Discuss the effect of substituents on the acidity and basicity of aromatic compounds.	CO2	Apply
21	Explain important reactions of benzoic acid with mechanisms.	CO2	Understand
Unit III			
S No.	**Questions**	**CO**	**Bloom's Taxonomy Level**
Section II			**Questions for 5 marks**
22	Write short notes on fatty acids and their reactions.	CO3	Remember
23	Explain the process of hydrolysis and hydrogenation of oils.	CO3	Understand
24	Define saponification and explain its significance.	CO3	Apply
25	What is rancidity? Differentiate between hydrolytic and oxidative rancidity.	CO3	Understand
26	Define and explain acid value and saponification value.	CO3	Remember
27	What is the significance of iodine value and Reichert–Meissl value?	CO3	Apply
Section III			**Questions for 10 marks**
28	Describe in detail the chemical reactions of fatty acids.	CO3	Understand
29	Explain the processes of hydrolysis, hydrogenation, and rancidity of oils with mechanisms.	CO3	Understand
30	Discuss the determination, principles, and significance of analytical constants of oils.	CO3	Evaluate
31	Explain the importance of fats and oils in pharmaceutical and industrial applications.	CO3	Apply
32	Discuss the methods used to evaluate the quality of oils and fats.	CO3	Remember
33	Write the principle involved in the determination of ester value and its significance. Differentiate between saturated and unsaturated fatty acids with suitable examples.	CO3	Understand
Unit IV			
S No.	**Questions**	**CO**	**Bloom's Taxonomy Level**
Section II			**Questions for 5 marks**
34	Write the structure and medicinal uses of naphthalene.	CO4	Apply
35	Explain the synthesis and reactions of anthracene.	CO4	Remember
36	Describe the structure and reactions of phenanthrene.	CO4	Understand
37	Discuss the electrophilic substitution reactions of naphthalene.	CO4	Analyze
38	Explain the mechanism of oxidation of anthracene.	CO4	Understand
39	Write the medicinal uses of polynuclear hydrocarbons.	CO4	Apply
Section III			**Questions for 10 marks**
40	Compare the structure and reactivity of naphthalene, anthracene, and phenanthrene.	CO4	Analyze
41	Discuss the electrophilic substitution reactions of naphthalene with mechanism.	CO4	Understand

42	Explain the structure, synthesis, and reactions of diphenylmethane and triphenylmethane.	CO4	Understand
Unit V			
S No.	**Questions**	**CO**	**Bloom's Taxonomy Level**
Section II			**Questions for 5 marks**
43	State and explain Baeyer's strain theory.	CO5	Understand
44	What are the limitations of Baeyer's strain theory?	CO5	Remember
45	Explain Sachse–Mohr's theory of strainless rings.	CO5	Understand
46	Discuss the stability of cycloalkanes.	CO5	Analyze
47	Write the reactions of cyclopropane.	CO5	Remember
Section III			**Questions for 10 marks**
48	Compare Baeyer's strain theory and Sachse–Mohr's theory.	CO5	Analyze
49	Explain in detail the concept of ring strain and stability in cycloalkanes.	CO5	Understand
50	Describe the mechanism of reactions of cyclopropane and cyclobutane.	CO5	Understand

Course Outcomes (CO): On the successful completion of the Course, students will be able to: -

CO1. Explain the structure, aromaticity, and reactions of benzene and its derivatives, including the effects of substituents on electrophilic substitution and applications of compounds like DDT and Saccharin.
CO2. Describe the chemical behavior, acidity, and structural characteristics of phenols, aromatic amines, and diazonium salts along with their qualitative tests and synthetic importance.
CO3. Analyze the chemical properties and stability of cycloalkanes using classical and modern strain theories and explain the acidity and reactions of aromatic carboxylic acid
CO4. Interpret the composition, reactions, and industrial processing of fats and oils, including analytical constants such as acid value, saponification value, iodine value, etc.
CO5. Summarize the synthesis, reactions, and medicinal importance of polynuclear hydrocarbons such as naphthalene, phenanthrene, and anthracene and their derivatives.

Summary Sheet

CO Wise		
CO	Q. No	Marks
CO1:	1, 2, 3, 4, 5, 6, 7, 8, 9,10	70
CO2:	11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	75
CO3:	22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	90
CO4:	34, 35, 36, 37, 38, 39, 40, 41, 42	60
CO5:	43, 44, 45, 46, 47, 48, 49, 50	55
Total Marks: 350		
Unit Wise		
Unit	Q. No	Marks

Unit 1:	1, 2, 3, 4, 5, 6, 7, 8, 9,10	70
Unit 2:	11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	75
Unit 3:	22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	90
Unit 4:	34, 35, 36, 37, 38, 39, 40, 41, 42	60
Unit 5:	43, 44, 45, 46, 47, 48, 49, 50	55
Total Marks: 350		
Blooms Taxonomy Level (BTL) Wise		
BTL	Q. No	Marks
LOT = 1, 2, 3, 4, 6, 7, 9, 10, 11, 13, 14, 15, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 38, 39, 41, 42, 43, 44, 45, 47, 49, 50		275
HOT = 5, 8, 12, 16, 17, 30, 37, 40, 46, 48		100
Total Marks: 375		

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Disclaimer: -This is a Practice Set. The Question in End term examination will differ from the Practice Set. This Practice Set is meant for practice only.