Name: **Enrolment No:**	

UPES

End Semester Examination, December 2024

Course: Pharmaceutical Organic Chemistry II — **Semester : III**

Program: B.Pharm — **Duration : 03 Hours**

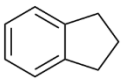
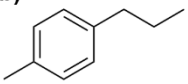
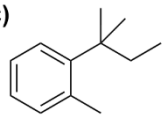
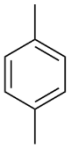
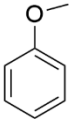
Course Code: BP301T — **Max. Marks: 75**

SECTION A

(20Qx1M=20 Marks)

S. No.	Answer all the following MCQ questions	Marks (1 X 20) = 20	COs
Q 1	**Which reaction mechanism is most observed in the reactions of benzene?** a) Electrophilic substitution b) Nucleophilic substitution c) Free radical substitution d) Addition reaction	1	CO2
Q 2	**Which of the following is used as a catalyst in the Kolbe reaction?** a) NaOH b) H_2SO_4 c) CO_2 d) Na_2CO_3	1	CO2
Q 3	**What is the major product when benzene reacts with chlorine in the presence of $FeCl_3$?** a) Benzyl chloride b) Chlorobenzene c) Hexachlorobenzene d) Benzene hexachloride	1	CO1
Q 4	**In the Sandmeyer reaction, an aryl diazonium salt reacts with CuBr to form:** a) Aryl bromide b) Aryl chloride c) Aryl iodide d) Aryl fluoride	1	CO4
Q 5	**Which of the following is an essential fatty acid?** a) Palmitic acid b) Oleic acid c) Linoleic acid d) Stearic acid	1	CO1
Q 6	**Which of the following is the most activating substituent for electrophilic substitution reactions?** a) $-NO_2$ b) $-CH_3$ c) -Cl d) -CN	1	CO3
Q 7	**Aniline reacts with concentrated H_2SO_4 and HNO_3 to produce:** a) Nitrobenzene b) m-Nitroaniline c) p-Nitroaniline d) 2,4,6-Trinitroaniline	1	CO4
Q 8	**The iodine value of an oil or fat is a measure of its:** a) Degree of unsaturation b) Acidity c) Solubility d) Melting point	1	CO1

Q 9	**Benzoic acid is prepared from toluene by:** a) Oxidation with alkaline $KMnO_4$ b) Oxidation with ozone c) Reduction with H_2/Pd d) Reaction with HCl	**1**	**CO4**
Q 10	**The conversion of phenol to 2,4,6-tribromophenol occurs in the presence of:** a) Bromine in CS_2 b) Bromine water c) Bromine in the presence of $FeBr_3$ d) Bromine in acetic acid	**1**	**CO3**
Q 11	**Which of the following gives effervescence with sodium bicarbonate?** a) Phenol b) Benzyl alcohol c) Benzoic acid d) Aniline	**1**	**CO1**
Q 12	**Which of the following compounds is known for its carcinogenic properties?** a) Phenanthrene b) Toluene c) Benzo[a]pyrene d) Cyclohexane	**1**	**CO1**
Q 13	**Benzoic acid undergoes decarboxylation when heated with soda lime to give:** a) Benzene b) Toluene c) Benzaldehyde d) Phenol	**1**	**CO4**
Q 14	**When toluene is treated with excess chlorine in the presence of sunlight, the major product is:** a) Benzyl chloride b) Benzyl alcohol c) Benzene hexachloride d) Chlorobenzene	**1**	**CO2**
Q 15	**The reaction of phenol with chloroform in the presence of NaOH produces:** a) Chlorophenol b) Benzaldehyde c) Salicylaldehyde d) Benzyl chloride	**1**	**CO2**
Q 16	**Cyclopropane is less stable compared to cyclohexane because:** a) It has high torsional strain and angle strain b) It has high steric hindrance c) It undergoes resonance destabilization d) It has a planar structure	**1**	**CO3**
Q 17	**The rancidity of fats and oils is caused by:** a) Hydrogenation b) Oxidation and hydrolysis c) High temperatures d) Dehydration	**1**	**CO1**
Q 18	**What is the product when aniline is treated with acetic anhydride?** a) Acetanilide b) Acetophenone c) N-Methyl aniline d) Benzamide	**1**	**CO4**
Q 19	**What happens when phenol reacts with bromine water?** a) Mono-bromophenol is formed b) Di-bromophenol is formed c) 2,4,6-Tribromophenol is formed d) No reaction occurs	**1**	**CO2**
Q 20	**Which product is formed when benzene reacts with acetic anhydride in the presence of $AlCl_3$?** a) Acetophenone b) Benzoic acid	**1**	**CO4**

	c) Toluene d) Benzaldehyde		
SECTION B (20 Marks) **(2Qx10M=20 Marks)** **Attempt two questions out of three questions.**			
Q 1	Explain the stability of cycloalkanes based on Bayer strain theory. Mention the two general methods of preparation and two chemical reactions of cycloalkanes.	**5+5 =10**	**CO3**
Q 2	i) Predict the products resulting from oxidation of each compound by $K_2Cr_2O_7$. a)  b)  c)  d)  e)  ii) Write the reaction mechanism for the formation of isopropyl benzene from benzene and propene in presence of phosphoric acid.	**5+5=10**	**CO1**
Q 3	i) Give any two methods of synthesis of Phenanthrene. ii) Write the structure and medicinal uses of Anthracene and Diphenylmethane.	**5+5=10**	**CO4**
SECTION-C (35 Marks) **(7Qx5M=35 Marks)** **Attempt seven questions out of nine questions**			
Q 1	Briefly explain the acidic nature of phenol. Give example.	**5**	**CO3**
Q 2	Discuss the hydrolysis and hydrogenation reaction of fatty acids with examples.	**2.5+2.5 =5**	**CO2**
Q 3	How can acid value and saponification value be determined? What is the significance?	**3+2 = 5**	**CO1**
Q 4	Illustrate the mechanism of Friedel-craft alkylation and Friedel-craft acylation reaction.	**2.5+2.5 =5**	**CO2**
Q 5	Explain the Haworth Synthesis to prepare Naphthalene.	**5**	**CO4**
Q 6	Write down the different chemical reactions of aromatic amines.	**5**	**CO2**
Q 7	Draw the structure and mention the pharmaceutical uses of DDT and Chloramine.	**2.5+2.5 =5**	**CO4**
Q 8	How can salicylaldehyde and salicylic acid be prepared from phenol? Explain any one reaction mechanism.	**2+3 = 5**	**CO4**
Q 9	Define activating and deactivating groups with examples.	**5**	**CO2**

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