Name: **Enrolment No:**	

UPES

End Semester Examination, December 2024

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

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

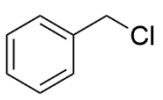
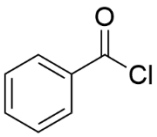
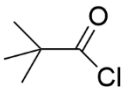
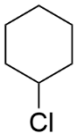
Course Code: BP301T — **Max. Marks: 75**

SECTION A

(20Qx1M=20 Marks)

S. No.	Answer all the following MCQ questions	Marks (1 X 20) = 20	COs
Q 1	**Electrophiles are _____.** a) Rich in electrons b) Neutral c) More affinity to nucleus d) Less affinity to nucleus	1	CO2
Q 2	**Which of the following compounds has three benzene rings in a linear arrangement?** a) Naphthalene b) Anthracene c) Phenanthrene d) Triphenylmethane	1	CO1
Q 3	**What type of reaction occurs when oils undergo hydrogenation?** a) Conversion to liquid oils b) Conversion to solid fats c) Conversion to fatty acids d) Conversion to fatty alcohols	1	CO3
Q 4	**Molecules must have _____ π electrons to be aromatic compound** a) 2n+2 b) 4n+2 c) 6n+2 d) 8n+2	1	CO2
Q 5	**What is the significance of determining the acid value of oils?** a) To measure un-saturation b) To check the free fatty acid content c) To determine the iodine value d) To assess the degree of hydrogenation	1	CO3
Q 6	**Phenol upon reacting with chloroform and aqueous NaOH gives_____** a) o- Hydroxy benzaldehyde b) p-Hydroxy benzaldehyde c) o,p-Dihydroxy benzaldehyde d) m,p-Dihydroxy benzaldehyde	1	CO2
Q 7	**What is the primary medicinal use of naphthalene?** a) Antiseptic b) Antifungal c) Disinfectant d) Anti-inflammatory	1	CO1
Q 8	**In the halogenation of benzene, why is a Lewis acid catalyst required?** a) To make benzene more reactive b) To remove water from the reaction	1	CO4

	c) To stabilize the benzene ring d) To facilitate the formation of an electrophile		
Q 9	**Benzoic acid can be converted into benzene by which of the following reactions?** a) Nitration b) Reduction with $LiAlH_4$ c) Decarboxylation d) Hydrogenation	**1**	**CO4**
Q 10	**Which process describes the breakdown of oils in the presence of water?** a) Esterification b) Hydrolysis c) Hydrogenation d) Oxidation	**1**	**CO2**
Q 11	**Which of the following cycloalkanes is the less stable?** a) Cyclopropane b) Cyclobutene c) Cyclopentane d) Cyclohexane	**1**	**CO3**
Q 12	**Which of the following best describes the structure of a benzene molecule?** a) Linear chain of six carbon atoms b) Branched chain structure c) Planar hexagonal ring d) Tetrahedral arrangement	**1**	**CO4**
Q 13	**Drying oils are typically used in the production of _____** a) Food products b) Soaps c) Paints and varnishes d) Medicines	**1**	**CO4**
Q 14	**Identify the regent to convert amines into amides.** a) Alkyl halide b) Acetic acid c) Sulphonyl chloride d) Benzoyl chloride	**1**	**CO3**
Q 15	**What is the resonance energy of benzene?** a) Approximately 36 kcal/mol b) Approximately 20 kcal/mol c) Approximately 50 kcal/mol d) Approximately 10 kcal/mol	**1**	**CO3**
Q 16	**The presence of an electron-withdrawing group on the benzene ring of an aromatic carboxylic acid _____.** a) Decreases the acidity b) Increases the acidity c) Has no effect on acidity d) Turns it into a base	**1**	**CO2**
Q 17	**Which of the following statements best describes why benzene is less reactive toward addition reactions than alkenes?** a) Benzene has more electron density. b) Benzene's aromatic stability makes it less reactive. c) Addition reactions do not occur in benzene. d) Benzene has a lower boiling point.	**1**	**CO1**
Q 18	**Selective reduction of 1,3-dinitrobenzen can be conducted in presence of _____.** a) NH_4SH b) Pd/C c) $SnCl_2$ d) All of these	**1**	**CO2**
Q 19	**Which of the following oils would have a higher iodine value?** a) Olive oil b) Coconut oil	**1**	**CO1**

	c) Palm oil d) Castor oil		
Q 20	**Cyclopropanes have a high ring-strain because** a) Its bond angles are 109.5° b) Its bond angles are less than 109.5° c) It has no bond angles d) It is an open-chain compound	**1**	**CO1**
SECTION B (20 Marks) **(2Qx10M=20 Marks)** **Attempt two questions out of three questions.**			
Q 1	What is the difference between fats and oils? Discuss the significance of acid value and saponification value? Draw the structure and write down the pharmaceutical use of Diphenylmethane and Anthracene.	**3+3+4 =10**	**CO1**
Q 2	Write a short note on Rimer-Tieman reaction. How phenolic group can be identified through different identification tests?	**5+5 1=10**	**CO2**
Q 3	Write the structural formula for the product formed by Friedel-Craft alkylation or acylation of benzene with **a)**  **b)**  **c)**  **d)** 	**4 X 2.5=10**	**CO4**
SECTION-C (35 Marks) **(7Qx5M=35 Marks)** **Attempt seven questions out of nine questions**			
Q 1	Explain the stability of cyclo-alkanes through Baeyer's strain theory.	**5**	**CO3**
Q 2	What is the structure of benzopyrene? Describe the mechanism of halogenation of benzene ring using lewis acid.	**1+4 =5**	**CO2**
Q 3	Draw the structures and write down the pharmaceutical uses of Saccharin and Chloramine.	**2.5+2.5 = 5**	**CO1**
Q 4	What happens when Naphthalene reacts with following reagents? (i) Reduce with H_2/Ni (ii) Oxides with $KMnO_4$ (iii) Addition of excess Cl_2 (iv) With Con.HNO_3 and Con.H2SO4 (v) With Con. H_2SO_4 at 40^oC	**5 X 1 = 5**	**CO2**
Q 5	Write a short note on hydrolysis and saponification reactions of fats and oils.	**5**	**CO3**
Q 6	"Benzoic acid more soluble in an aqueous alkaline solution than neutral or acid solution" – justify it. Why will Benzoic acid not undergo Friedel-Craft Reaction?	**3+2 =5**	**CO2**
Q 7	How can phenanthrene moiety be synthesized from benzene? What is the pharmaceutical use of phenanthrene?	**4+1 =5**	**CO4**
Q 8	How can be anthracene converted to anthraquinone and alizarine?	**2.5+2.5 = 5**	**CO4**
Q 9	How can aspirin be synthesized from phenol derivative by using Kolbe-Schmidt reaction?	**5**	**CO2**

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