Name:

Enrolment No:

UPES

End Semester Examination, May 2025

Course: Fundamentals of Organic Chemistry **Semester: II**

Program: B.Sc. (H) Chemistry **Time : 03 hrs.**

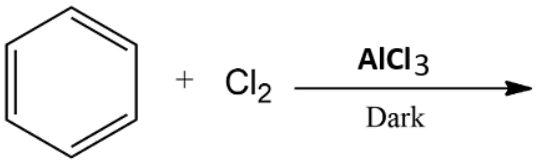
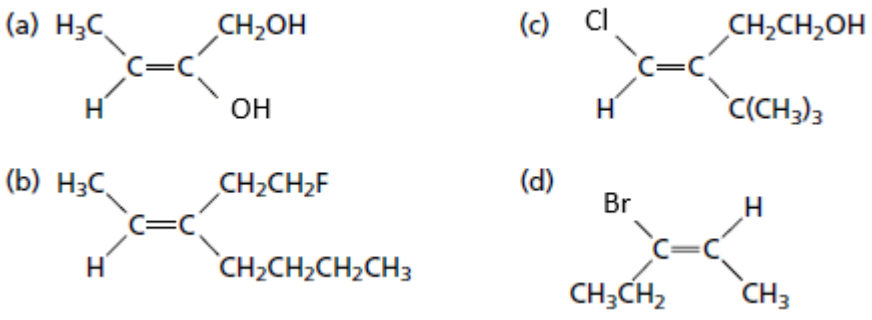
Course Code: CHEM1032 **Max. Marks: 100**

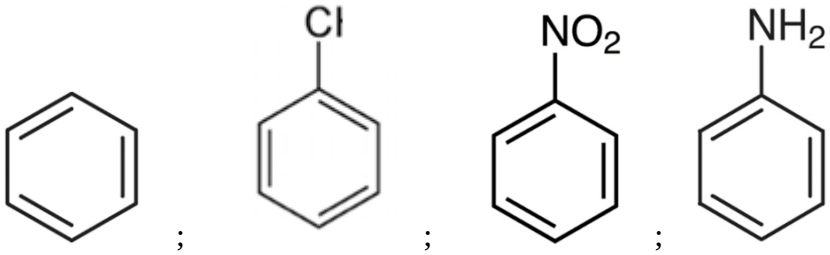
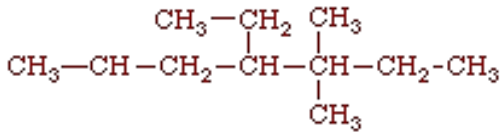
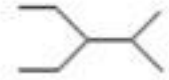
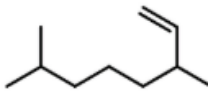
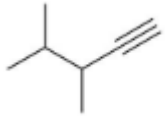
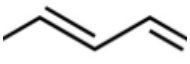
Instructions: Read all the instructions below carefully and follow them strictly:

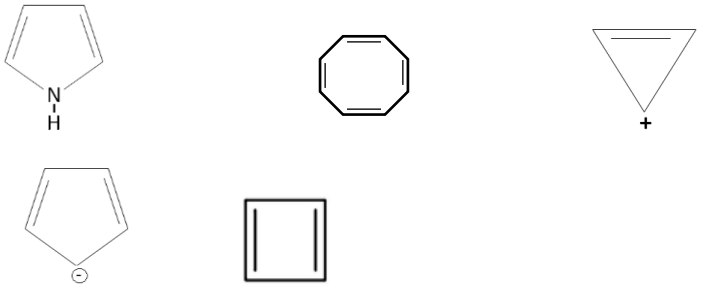
1) **Mention Roll No. at the top of the question paper.**
2) **Internal choice has been given in Q9 and Q11.**
3) **ATTEMPT ALL THE PARTS OF A QUESTION AT ONE PLACE ONLY.**

SECTION A

(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	An alkene on ozonolysis gave two moles of acetone. Deduce the structure of the alkene and name the compound.	**4**	**CO2**
Q 2	Complete the reaction and discuss the mechanism:  Benzene	**4**	**CO3**
Q 3	Explain the mechanism of addition of HBr on propene.	**4**	**CO3**
Q 4	Draw all the possible isomers of hexane and name them.	**4**	**CO1**
Q 5	Determine the configuration of each of the following alkenes as Z or E, as appropriate:  	**4**	**CO1**

SECTION B (4Qx10M= 40 Marks)			
Q 6	Give reasons: a. Wurtz reaction is not a good method to synthesize odd number alkane. b. Boiling point of isobutane is less than n-butane although both have same molecular formula. c. Alkanes are considered to be chemically inert. d. Cyclopropane gives ring opening reactions. e. Benzene undergoes electrophilic substitution reactions.	**10**	**CO2**
Q 7	Arrange the following as directed: a)  ; ; ; (Increasing order of reactivity towards electrophilic substitution reactions) b) $CH_2ClCOOH$; CH_2FCOOH; $CH_2BrCOOH$, CH_3COOH (Increasing order of Acidity) c) CH_3CONH_2; $CH_3CH_2NH_2$; NH_3 (Decreasing order of Basicity)	**4+3+3**	**CO1**
Q 8	Write IUPAC names of the following compounds: a.  b.  c.  d.  e. 	**10**	**CO1**

Q 9	Mention two chemical tests (with reaction) to differentiate between the following pairs: a. n-pentane and 2-pentene b. 1-butyne and 2-butyne **OR** Complete the reactions: a. CH_3-CH=CH-CH=CH_2 + CH_2=CH_2 ⟶ b. $C_6H_5COCH_3 \xrightarrow{Zn-Hg \text{ and conc.HCl}}$ c. $C_6H_6 \xrightarrow{H_2/Ni,\ 180^oC}$ d. $C_6H_6 + CH_3COCH_3 \xrightarrow{\text{Anhy. } AlCl_3}$	**10**	**CO2**
SECTION-C **(2Qx20M=40 Marks)**			
Q 10	Carry out following conversions: a. Ethene to toluene b. Methane to 2-butyne c. Ethane to Ethyl alcohol d. Acetylene to 2-propene e. Methyl chloride to acetone	**20**	**CO2**
Q 11	A. Classify the following compounds into aromatic, antiaromatic and non-aromatic with proper justification:  B. What happens when: a. Sodium acetate is electrolyzed. b. Methyl magnesium bromide reacts with ethyl alcohol. c. Benzene undergoes ozonolysis. d. Benzene reacts with HCN and HCl in presence of anhy. $AlCl_3$. e. Cyclopentanone undergoes Wolf Kishner reduction. **OR** A. Write short notes on: a. Cracking b. Isomerization	**10 +10**	**CO2**

	B. Complete the following reaction sequence and name the final products: $CH_3CH_2CH = CH_2 \xrightarrow{(i)\ Hg(OCOCH_3)_2,(ii)NaBH_4} A \xrightarrow{Conc.H_2SO_4} B \xrightarrow{Cl_2} C$ $C \xrightarrow{NaNH_2} D$		