Name: **Enrolment No:**	

UPES

End Semester Examination, May 2025

Course: Organic Chemistry-V **Semester: VI**

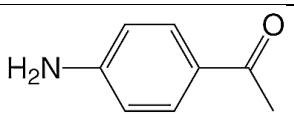
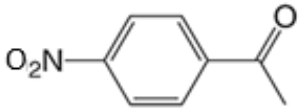
Program: B.Sc. (H) Chemistry **Time : 03 hrs.**

Course Code: CHEM3017 **Max. Marks: 100**

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

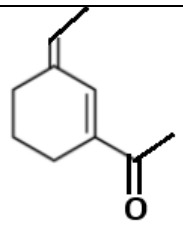
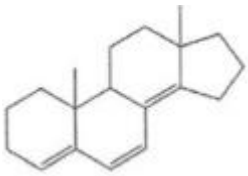
1) **Mention Roll No. at the top of the question paper.**
2) **Internal choice has been given in Q9 and Q11.**
3) **ATTEMPT ALL THE PARTS OF A QUESTION AT ONE PLACE ONLY.**

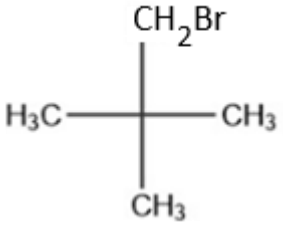
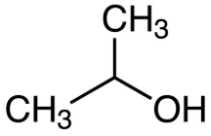
SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Discuss anionic polymerization mechanism with the help of a suitable example.	**4**	**CO2**
Q 2	Differentiate between addition and condensation polymerization.	**4**	**CO1**
Q 3	Describe polymer additives with suitable examples.	**4**	**CO2**
Q 4	In IR spectra of  , >C=O peak is obtained at 1677 cm^{-1}, however, in  , >C=O peak gets shifted to 1700 cm^{-1}. Why?	**4**	**CO3**
Q 5	Which among the following can be used as solvent for UV spectroscopy and why: cyclohexane, acetone, butadiene, ethanol	**4**	**CO1**

SECTION B
(4Qx10M=40Marks)

Q 6	Discuss the structure elucidation of Maltose.	**10**	**CO4**
Q 7	Write short notes on the following: a. Edible dyes b. Phthalein dyes	**5+5**	**CO2**
Q 8	On the basis of Woodward rules, calculate the expected position of the absorption maximum for the following compounds:	**10**	**CO3**

	a.  b.  Given that, Each exocyclic double bond = +5 mμ Each double bond extending conjugation = +30 mμ **For dienes or trienes:** Basic value for butadiene system or a cyclic conjugated diene = 217 mμ Homoannular conjugated diene = 253 mμ Heteroannular conjugated diene = 215 mμ Each alkyl substituent of ring residue = +5 mμ **For α,β-unsaturated carbonyl compounds:** Basic value for α,β-unsaturated ketone = 215 mμ Basic value for α,β-unsaturated aldehyde = 207 mμ Each alkyl group or ring residue at α-position = +10 mμ Each alkyl group or ring residue at β-position = +12 mμ Each alkyl group or ring residue at γ-position = +18 mμ Homoannular conjugated diene = +39 mμ		
Q 9	Classify the polymers on the basis of: a. Thermal behaviour b. Tacticity **OR** Write short notes on the following: a. Mutarotation b. Polyester	**10**	**CO1**
	SECTION-C **(2Qx20M=40 Marks)**		
Q 10	Discuss the preparation and two uses of the following polymers: a. Polythene b. PF resin c. Nylon 66 d. Neoprene	**20**	**CO2**
Q 11	A. Give structures consistent with each of the following sets of NMR data:		**CO3**

	a) C_3H_8O (i) Triplet, δ = 0.94 (3H) (ii) Triplet, δ = 3.58 (2H) (iii) Sextet, δ = 1.57 (2H) (iv) Singlet, δ = 2.26 (1H) b) $C_3H_3Cl_5$ (v) Triplet, δ = 4.52 (1H) (vi) Doublet, δ = 6.07 (2H) **OR** What is the operating frequency required by an H-NMR spectrometer than generates a magnetic field of 14.820 Tesla. (Given, gyromagnetic ratio = 2.675×10^8 $Tesla^{-1}sec^{-1}$) B. Which chemical is used as standard in NMR spectroscopy and why? Predict the multiplicity of each kind of proton in the given molecules: a)  b)  **OR** Explain the factors affecting the vibrational frequencies of the particular group in IR spectroscopy with the help of suitable examples.	**10 + 10**	