Name:

Enrolment No:

UPES

End Semester Examination, May 2024

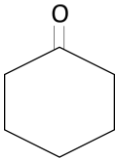
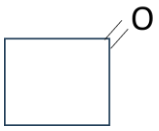
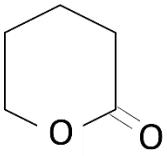
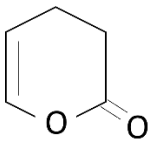
Course: Organic Chemistry V **Semester: VI**

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

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

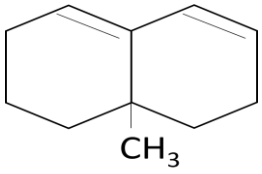
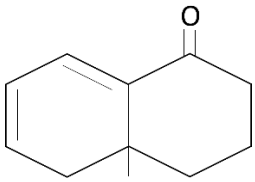
Instructions: 1. Write your Enrollment number on the question paper.
2. Internal choices are given in question numbers 8 and 11.
3. Attempt all parts of a question at one place only.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Explain the reactions to support the presence of one free >C=O group in the structure of Maltose.	**4**	**CO3**
Q 2	Describe with the help of chemical reactions, why methyl orange is yellow in alkaline medium while pink in acidic medium.	**4**	**CO3**
Q 3	Discuss the mechanism of the polymerization of propylene to polypropylene.	**4**	**CO1**
Q 4	How will you distinguish the following pairs on the basis of infrared spectroscopy: i)  and  ii)  and 	**4**	**CO2**
Q 5	Explain various types of bending vibrations in infrared spectroscopy.	**4**	**CO2**

SECTION B
(4Qx10M= 40 Marks)

Q 6	a) Describe a method to convert an aldohexose to aldopentose. b) Draw the furanose and pyranose structures of α-D-Glucose.	**6+4**	**CO3**
Q 7	a) Discuss the methods to prove the presence of two -OH groups at position 1 and 2 in the structure of Alizarin. b) Explain the conversion of phthalic anhydride to purpurin.	**7+3**	**CO3**

Q 8	Explain Suspension polymerization for the synthesis of polymers. Also, mention its advantages and disadvantages. **OR** Differentiate between bulk polymerization and solution polymerization.	**6+4** **10**	**CO1**
Q 9	Give reasons: a) The molar extinction coefficient of CH_3I is more than that of CH_3Cl. b) TMS is used as primary reference in NMR spectroscopy. c) cis-1,2-dichloroethene is IR active while trans-1,2-dichloroethene is IR inactive.	**4+3+3**	**CO2**
SECTION-C (2Qx20M=40 Marks)			
Q 10	a) Identify the compounds among the following, which can behave as monomers: C_2H_5OH; CH_2=CH-CN; CH_3-CH_2-CH_2Cl; NH_2-$(CH_2)_6$-NH_2, Aniline b) Classify the polymers on the basis of their final applications. c) Compare the addition polymers and condensation polymers along with examples. d) Mention the monomers (name and structure) of the following polymers: Polystyrene; Orlon; Nylon-66; Natural rubber; Teflon	**5+5+5+5**	**CO1**
Q 11	a) Following the Woodward-Fieser rules, calculate the absorption maximum for the following compounds:  and  b) Identify the number and multiplicity of the signals obtained in 1H NMR for the following compounds: C_6H_5-CH_2-CHO; CH_3-CH_2-CH_2-CH_3; CH_2Cl-CH(Cl)-CH_2Cl **OR** Discuss the principle of IR spectroscopy. Explain the factors influencing the vibrational frequencies. What is fingerprint region and its significance?	**6 + 14** **5+10+5**	**CO2**