Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UPES

End Semester Examination, December 2023

Course: SPECE & FGOC (Chemistry) **Semester: III**

Program: B Sc (H) Geo/ B Sc (H) Phy/B Sc (H) Math (GE) **Time : 03 hrs.**

Course Code: CHEM1009G **Max. Marks: 100**

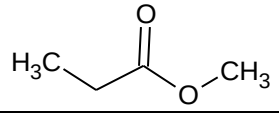
Instructions:

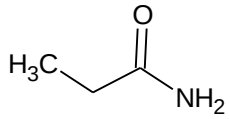
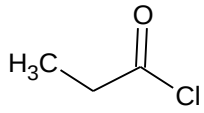
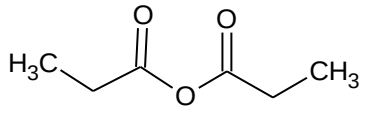
1. **Write your enrolment number on the top left of the question paper**
2. **Do not write any thing else on the question paper except your enrolment number**
3. **Attempt all part of a question at one place only**
4. **Internal choice is given for question number 9 of Section B and question number 11 of Section C only.**

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	How many triple points are in the phase diagram of Sulphur system. Explain them briefly.	**4**	**CO1**
Q 2	The molar conductances of CH_3COONa, HCl and NaCl at infinite dilution are $95x10^{-4}$, $434.18x10^{-4}$ and $133.24x10^{-4} Sm^2mol^{-1}$, respectively at 25˚C. Calculate the molar conductance at infinite dilution for CH_3COOH.	**4**	**CO1**
Q 3	How will justify that glucose has one aldehydic group and one primary hydroxyl group.	**4**	**CO2**
Q 4	What is Nernst distribution law?	**4**	**CO2**
Q 5	Give a brief account on isoelectric point and zwitter ions.	**4**	**CO1**

SECTION B
(4Qx10M= 40 Marks)

Q 6	Describe the following: a) Mutarotation b) Enantiomers and Diastereomers	**5+5**	**CO1**
Q 7	Propose synthesis of the following from propanoic acid. i) 	**10**	**CO3**

	ii)  iii)  iv) 		
Q 8	Elucidate the terms maximum boiling azeotrope and minimum boiling azeotrope?	**10**	**CO3**
Q 9	Explain the role of a) Salt bridge in an electrochemical cell b) Reference electrode in potentiometric titration **OR** a) Can we use a silver vessel to store 1M $ZnSO_4$ solution? Give appropriate reason. Given $E^o_{Zn2+/Zn}$ = -0.76 V and $E^o_{Ag+/Ag}$ = 0.80 V b) 0.1 N solution of a salt placed between two platinum electrodes, 30cm apart and an area of 4cm^2 has a resistance of 35Ω. Calculate the equivalent conductance of the solution.	**10**	**CO2**
SECTION-C **(2Qx20M=40 Marks)**			
Q 10	a) Draw and explain phase diagram of Silver and lead system. b) Explain the following tests. i) Hinsberg test ii) Carbylamine test	**10+10**	**CO2**
Q 11	a) Explain Ruff degradation in detail. b) Briefly explain the following reactions i) Perkin's reaction ii) Reaction of glucose with Bromine water **OR** a) Explain Killani Fischer synthesis in detail b) Briefly explain the following reactions i) Reformatsky reaction. ii) Reaction of glucose with conc. HNO_3	**10+10**	**CO3**