Name: **Enrolment No:**	

UPES

End Semester Examination, May 2024

Course: Polymer Chemistry **Semester:** II
Program: MSc Chemistry **Time** : 03 hrs.
Course Code: CHEM 7052 **Max. Marks: 100**

Instructions: All questions are compulsory.
Support your answer with suitable examples and figures wherever required.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Explain redox polymerization using one suitable example.	**4**	**CO1**
Q 2	What is the meaning of chemical reactivity? Explain with using polymer reaction.	**4**	**CO1**
Q 3	How solution polymerization technique is advantageous over bulk polymerization technique?	**4**	**CO1**
Q 4	What do you understand by plasma polymerization? Explain with suitable diagram.	**4**	**CO1**
Q 5	Describe vitrimers including their advantages and applications.	**4**	**CO2**

SECTION B
(4Qx10M= 40 Marks)

Q 6	Discuss in detail the factors influencing rate of free radical polymerization.	**10**	**CO1**
Q 7	How the role of solvent and reaction conditions influence the kinetics of ionic polymerization?	**10**	**CO1**
Q 8	Explain the effect of polymer crystallinity on mechanical and thermal properties of the polymers.	**10**	**CO3**
Q 9	Compare random and block polymerization with their respective advantages and limitations. *Or* Explain the concept of alternating polycondensation. Discuss the possible kinetics followed by polycondensation reactions.	**10**	**CO2**

SECTION-C (2Qx20M=40 Marks)			
Q 10	(a) Explain photo polymerization with mechanism behind the reaction. (b) Explain metathesis polymerization with limitations associated with it.	**10 + 10**	**CO3**
Q 11	(a) Discuss the key difference in initiation, propagation and termination steps between ionic and coordination polymerization. *Or* Explain the mechanism of ring-opening polymerization with an example. (b) What is interfacial polymerization? How it is beneficial over other techniques Or Compare and contrast free radical and ionic polymerization mechanism.	**10 + 10**	**CO2**