MANIPAL ACADEMY of HIGHER EDUCATION
(Institution of Eminence Deemed to be University)

Reg.No.									

DEPARTMENT OF SCIENCES, IV SEMESTER M.Sc. (Chemistry)
END SEMESTER EXAMINATIONS, APRIL 2023
POLYMER CHEMISTRY [CHM 6009]
(CHOICE-BASED CREDIT SYSTEM - 2021)

Time: 3 Hours Date: 26 Apr 2023 MAX. MARKS: 50

Note (i) Answer ALL questions

(ii) Draw diagrams, and write equations wherever necessary

		Marks	CO	BL
1A	i) Explain the effect of the crystallinity of a polymer on its density, hardness, and permeability. ii) Explain poly addition polymerisation with an example.	3 2	CO1 CO2	2 3
1B	i) Describe the types of polymers based on their properties and applications. ii) Describe the laminating process and its importance.	3 2	CO1 CO5	2 3
2A	i) Describe the following techniques: a) Bulk polymerisation b) Suspension polymerisation ii) Give suitable reasons: a) Polybutadiene with a higher percentage of cis-isomers usually shows better elongation properties. b) Polymers are polydisperse in nature	3 2	CO2 CO1	3 2
2B	i) Explain with reactions the synthesis of poly (p-xylene) by gas phase polymerisation ii) Describe the Hand Lay-up Technique for the production of reinforced plastics.	3 2	CO2 CO5	3 3
3A	i) Explain the steps involved in cationic polymerisation in the case of vinyl monomers. ii) Explain the synthesis of carboxyl–terminated and 1-hydroxyl-terminated polybutadienes	3 2	CO2 CO3	2 3
3B	i) Describe the preparation of the following polymers with reaction conditions required: a) Poly ethylene glycol b) Poly styrene ii) Give suitable reasons: a) Ultrasonic degradation is a special case of mechanical degradation b) In blade coating, the thickness of the coating can be easily controlled.	3 1 1	CO3 CO4 CO5	3 2
4A	i)Describe the preparation of polyurethane. Mention its properties and uses. ii) Explain the mechanism of action of antioxidants.	3 2	CO3 CO4	3 3
4B	i) Write the reaction with conditions required for the conversion of a) Polyvinyl alcohol into the polyvinyl ether b) Poly nitro propylene into poly propylenamine ii) Describe the blow molding process.	3 2	CO4 CO5	3 2
5A	I) Describe the preparation of the following polymers with reaction conditions: a) Poly teratrafluro ethylene b) Polyvinyl oxazolidione ii) Describe the film casting process.	3 2	CO3 CO5	3 2
5B	i) Explain the mechanism of grafting of styrene on polybutadiene. ii) Describe the extrusion molding process.	3 2	CO4 CO5	2 2

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