DAYANANDA SAGAR COLLEGE OF ENGINEERING

(An Autonomous Institute Affiliated to VTU, Belagavi)

ShavigeMalleshwara Hills, Kumaraswamy Layout, Bengaluru-560078

Model Question Bank 2018-19

Program: B.E.

Course: Engineering Chemistry Semester: I/II

Course Code: 18CH1ICCHY/18CH2ICCHY

UNIT-IV - POLYMERS

Q. No	Question Description	Marks	BL	COs
1.	a) Justify, the Glass transition temperature of polymer decreases with increase in flexibility Less hindrance and free rotation	1 Mark Each	6	CO2
	b) Name the reactants used in the synthesis of epoxy resin. Bis phenol –A and Epichloro hydrin		1	CO1
	c) Identify the Example for an adhesive. Epoxy resin		1	CO1
	d) List the requirement for exhibiting conduction in a polymer molecule.		1	CO1
	e) Justify the Glass transition temperature of polymer increases with increase in cross linking and branching. With increase in cross linking hindrance will be more and rotation will be restricted.		6	CO2
	f) Identify the Example for polymer composite. Kevlar		1	CO1
	h)Identify an example of a polymer which is prepared by addition polymerization Polyethene, PVC, Teflon etc		1	CO1
	j)Identify an example of a polymer which is prepared by condensation polymerization Nylon 6,6		1	CO1
	k) Identify an Example for biodegradable polymer. Poly lactic acid		1	CO1
	l) Identify an example for conducting polymer Polyaniline or polypyrrole		1	CO1
	m) Identify the polymer used in sensors Polyaniline		1	CO1
	n) Tg of polystyrene is high compare to polyethene Polystyrene is more bulky due to aromatic ring		6	CO2,
	o) Tg of nylon 6,6 is higher than that of Polyethylene		6	CO2

	Due to intermolecular force in nylon 6,6			
	p) Define polymer composite no answer?		1	CO2
	q) Name any one initiator used in free radical polymerization. Di Benzoyl peroxide		1	CO1
2	Illustrate the synthesis and properties of epoxy resin along with its applications.	6	2& 3	CO1
3	Describe the synthesis of Kevlar and discuss its properties and uses.	8	1	CO1
4	Solve for the number average and weight average molecular weights of two polymers of molecular weights 10000 and 100000 when they are mixed: (a) in equal parts by weight, (b) in equal number of molecules.	6	4	CO3
5	A polymer sample contains 2, 3 and 4 molecules having molecular weights 2×10^3, 3×10^3 and 4×10^3 respectively. Solve for the number average and weight average molecular weights of the polymer.	6	4	CO3
6	A polymer sample has population as follows: 5 molecules of molecular mass each = 2000; 4 molecules of molecular mass each = 3000; 3 molecules of molecular mass each = 4000. Solve for its number average and weight average molecular weights.	6	4	CO3
7	Solve for M_n and M_w of a polymer which consists of 35% molecules having molecular mass 25000, 35% molecules having molecular mass 20000 and the remaining molecules having molecular mass 10000.	6	4	CO3
8	Describe addition and condensation polymerization reactions with suitable examples.	6	1	CO1
9	Describe the free radical mechanism of addition polymerization of ethylene.	6	1	CO1
10	Illustrate the significance of glass transition temperature.	4	2,3	CO5
11	Clarify the role of the following on Tg: (a) molecular mass (b) branching & cross linking (c) stereoregularity	6	2	CO5
12	Illustrate the influence of the following on Tg; (a) flexibility (b) intermolecular forces	4	2,3	CO6
13	Construct the synthesis of silicone rubber starting from dichlorosilane and mention its properties and applications.	8	3	CO1
14	Illustrate the synthesis of epoxy resin along with its applications.	6	2,3	CO1
15	Describe the synthesis of silicone rubber starting from dichlorosilane and mention its properties and applications.	8	1	CO4
16	Explain the applications of polyaniline and polypyrrole.	6	2	CO6
17	Define biodegradable polymers and describe their requirements.	6	1	CO1
18	Illustrate the synthesis and properties of polylactic acid along with its applications.	8	3	CO1
19	Define substitution reaction with example	4	1	CO1
20	Differentiate between addition and elimination reaction with example	6	4	CO4
21	Define oxidation and reduction reaction with example	6	1	CO1