

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: BTECH.  
BRANCH: CHEMICAL ENGINEERING**

**SEMESTER : V  
SESSION : MO/2024**

**SUBJECT: CL341 POLYMER TECHNOLOGY**

**TIME: 3 Hours**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
- 

		CO	BL
Q.1(a)	Compare the mechanism of action of plasticizers and lubricants. Given the following products made of plastics you write down the name of additives required to make each of these. Assume the polymer as you understand as suitable: Carry bag for vegetables, Garden pipe, Balloons	[2+3] 1	3
Q.1(b)	Explain the function of coupling agents in polymer biocomposite made with Unsaturated polyester and jute fibre.	[5] 1	2
Q.2(a)	Explain the effect of polar substituent and polar chemical linkage in polymer chain on the mechanical properties and solubility of the respective polymers. Give suitable examples.	[3+2] 2	2
Q.2(b)	Explain the rubber toughening mechanism of polymer blends. Illustrate the difficulties faced during processing of ABS.	[3+2] 2	2
Q.3(a)	Name any two types of catalysts used for Polyurethane curing and illustrate the effect of any one system upon the properties of PU.	[2+3] 3	1
Q.3(b)	Explain the reasons behind the specific application of VE in marine industries and sometimes in replacement of epoxy.	[5] 3	2
Q.4(a)	Describe the procedure of blending of a thermoset with a thermoplastic resin. Give a suitable example.	[4+1] 4	4
Q.4(b)	Explain the limitations of composite manufacturing by compression moulding and suggest the remedies.	[3+2] 4	3
Q.5(a)	Explain the terms 'cavitation' and 'metallizing' of polymer films. Why are these required? Write down the principle of conductivity of polymers by doping. Give examples.	[3+3] 5	3
Q.5(b)	Justify the use of specific polymers in the following automobile parts: Head rest, Bumpers, Engine cover, Cable insulation,	[4] 5	5

:::25/11/2024:::M