BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP/2023)

CLASS: B.TECH   SEMESTER : IV
BRANCH: CHEM. ENGG.   SESSION : SP/2023

SUBJECT: CL229 MACROMOLECULAR SCIENCE

TIME: 02 Hours   FULL MARKS: 25

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4.* Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Compare the thermoplastic and thermoset polymers. Give examples.	[2]	CO1	compare
Q.1(b)	"Slower the rate of cooling greater the size of crystal for polymers and higher the degree of crystallinity." Explain this statement with specific example.	[3]	CO5	explain
Q.2(a)	How do you recognise a condensation polymer from addition polymer? Explain with suitable examples.	[2]	CO1	explain
Q.2(b)	Draw the curve of crystallization rate vs. temperature for a macromolecule and explain the various stages of crystallization on it.	[3]	CO3	draw
Q.3(a)	Why do we need copolymers? Compare Polystyrene with ABS and SAN to explain the usefulness of copolymers.	[2]	CO2	compare
Q.3(b)	Derive Carothers equation. Write down the assumptions regarding this equation.	[3]	CO2	derive
Q.4(a)	Why do we quote average molecular weight of polymers instead of absolute value?	[2]	CO1	why
Q.4(b)	Find out the polydispersity index of the following polymer:	[3]	CO1	find

Molecular weight	Number of moles
45000	1100
52000	250
75000	3000

			CO	BL
Q.5(a)	What is the difference between internal and external plasticization of polymers?	[2]	CO1	what
Q.5(b)	Why do we prefer external plasticization for PVC rather copolymer formation of vinyl chloride? Explain the effect of plasticization upon glass transition point of polymers.	[3]	CO1	explain

::::::24/02/2023::::::M