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

CLASS: BTECH **SEMESTER : V**
BRANCH: CHEMICAL ENGINEERING- PLASTICS AND POLYMERS **SESSION : MO/2022**

SUBJECT: CL334 POLYMER TECHNOLOGY-I

TIME: 3:00 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.

Q.1(a)	Describe filler based on its characteristic's parameters.	[2]
Q.1(b)	Explain the reason why additive should be stable at ambient conditions	[3]
Q.1(c)	Illustrate the mechanism of oxidative degradation of polymer. How preventive antioxidant plays important role for polymer protections.	[5]
Q.2(a)	Classify plasticizer based on mode of action.	[2]
Q.2(b)	Define crosslinking. Explain two types of crosslinking that take place in polymer chain.	[3]
Q.2(c)	Illustrate the role of nucleating agents to control the crystalline particle size. What other processing conditions plays important role to control crystallization?	[5]
Q.3(a)	Classify EVA polymer on the basis of VA content.	[2]
Q.3(b)	Analyze the three different approaches of XLPE (cross link polyethylene).	[3]
Q.3(c)	Demonstrate UNIPOL process of HDPE synthesis, emphasis of reaction conditions, molecular wt regulator, heat dissipation during reaction.	[5]
Q.4(a)	Justify that NYLON cannot process without pre drying.	[2]
Q.4(b)	Write the reaction mechanism of Polybismaleimide(PBMI). State some advantages of this polymer.	[3]
Q.4(c)	Describe the general equation for the preparation of NYLON 66, elaborating on the actual compounds taken to prepare the same.	[5]
Q.5(a)	Discuss the different advantages of SAN (Styrene Acrylonitrile) over PS (polystyrene)	[2]
Q.5(b)	Explain the application and synthesis of EPS (Expanded polystyrene) by bulk process	[3]
Q.5(c)	Illustrate with diagram of the suspension polymerization process of PVC synthesis.	[5]

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