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

CLASS: BE **SEMESTER : VI/ADD**
BRANCH: CHEMICAL ENGG.(PLASTICS & POLYMER) **SESSION : SP/19**

SUBJECT: PC6001 POLYMER BLENDS AND COMPOSITES

TIME: 3.00 Hrs. **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
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)	What is the difference between interface and interphase in polymer blends?	[2]
Q.1(b)	Differentiate between semi and full IPNs. Give suitable examples.	[4]
Q.1(c)	"Morphology of IPNs is kinetically controlled whereas morphology of reactive blends may be thermodynamically controlled". Explain with a typical example.	[6]
Q.2(a)	Write at least two applications of MMC and CMC.	[2]
Q.2(b)	Highlight the differences between Pultrusion and Extrusion.	[4]
Q.2(c)	Write down the methods of polymer based composite preparation by pultrusion and vacuum bag methods.	[6]
Q.3(a)	Define Interpenetrating polymer networks.	[2]
Q.3(b)	What are the advantages of biocomposites? Give suitable examples.	[4]
Q.3(c)	Describe methods of preparation of Polymer Concrete. Mention at least two application of PMC.	[6]
Q.4(a)	Mention two different methods of compatibillization of polymer blends.	[2]
Q.4(b)	Give any two examples of miscible polymer blends. Explain the reason of the miscibility in these.	[4]
Q.4(c)	What are the terms miscibility and compatibillization meant for? Explain.	[6]
Q.5(a)	What is the significance of interfacial thickness?	[2]
Q.5(b)	What are the requirements of miscibility of polymers in a blend?	[4]
Q.5(c)	"IPN preparation may be considered as a tool of polymer toughening." Justify this statement with suitable example.	[6]
Q.6(a)	Write down the methods of composite testing for flexural, ILSS and tensile strength according to ASTM.	[3]
Q.6(b)	What is the significance of dynamic mechanical analysis for composite? Why do we see higher modulus of composites based on thermosets with glass fibre than with natural fibres?	[3]
Q.6(c)	What is the significance of loss modulus for composite? How is it dependent on fibre /resin bonding? Explain.	[6]
Q.7(a)	Classify polymer blends.	[2]
Q.7(b)	Write short notes on thermoplastic elastomer.	[4]
Q.7(c)	Differentiate between copolymers, blends and IPNs. Expalin with suitable examples.	[6]

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