

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

CLASS: BE
BRANCH: CHEMICAL & PLASTICS
POLY.

SEMESTER : V
SESSION : MO/19

SUBJECT: PC5001 POLYMER TECHNOLOGY-II
TIME: 3 HOURS

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) Give the reaction mechanism and stoichiometry ratio of reactant for Resol and Novolac. [2]
Q.1(b) State advantage and disadvantage of amino resin in comparison to Phenolic resin. [4]
Q.1(c) Give reaction mechanism of Urea formaldehyde resin formation, emphasis on reaction condition and stoichiometry ratio of reactant. [6]
- Q.2(a) What are the advantages of silicon resin? [2]
Q.2(b) Write down the different types of curing mechanisms for epoxy resins. [4]
Q.2(c) How do you prepare USP resins? Give details on reaction parameters and stoichiometric ratios. [6]
- Q.3(a) What are the processes, which leads to the degradation of polyacetals? [2]
Q.3(b) Structurally how polyesters and polycarbonates are similar. Elaborate on a pointwise manner. [4]
Q.3(c) What is by far the most important starting material for the preparation of polycarbonate of the bis-phenol A type? [6]
- Q.4 Write Short notes on
(a) Conducting polymer [6]
(b) Bio polymer [6]
- Q.5(a) Which factor should be kept in mind while processing PEK? Why is it given so importance? [2]
Q.5(b) What is PEEK? Illustrate the same with a diagram. How is it industrially manufactured? [4]
Q.5(c) Sketch the process of manufacture of polyether ketenes by polyetherification process. [6]
- Q.6(a) What kind of polymer are suitable for electrical insulation applications? [2]
Q.6(b) Thermoset polymers are very useful in the manufacture of electrical fittings: Name with justifications a thermoset polymer used for this purpose. [4]
Q.6(c) What is the purpose of the plastic coating on the wire? Explain the type of polymer used in this purpose emphasis on its structural features. [6]
- Q.7(a) Why polymers are used in drug delivery system? [2]
Q.7(b) Epoxy based composite material are suitable for rocket casing - explain. [4]
Q.7(c) Describe the polymer in agricultural applications. [6]

:::::02/12/2019:::::M