(REVISION-2015) Reg. No…….

TED(15) 2091 Signature……..

(MODEL QUESTION PAPER)

SECOND SEMESTER DIPLOMA EXAMINATION IN POLYMER TECHNOLOGY

FUNDAMENTALS OF POLYMER SCIENCE

(MAXIMUM MARKS-100) (TIME:3 HOURS)

PART-A

I Answer the following questions in *one* or *two* sentences. Each question carries 2 marks.

1. Define the term monomer and polymer?
2. Designate the functionality of phenol and acetylene.
3. Differentiate between initiator and inhibitor with examples?
4. Write the structure of i) PVC ii) PMMA iii) NR and iv) NBR.
5. Name two antioxidants and two stabilisers. (5X2=10)

PART-B

II Answer any ***five*** questions from the following. Each question carries 6 marks.

1. Classify the polymers with respect to their origin. Give examples of each with structure?
2. Identify the special characteristics and applications of polymers?
3. Illustrate the condensation polymerisation of Nylon6,6?
4. Compare the merits and demerits of different polymerization techniques?
5. State the structure, raw polymer properties and application of butyl rubber?
6. Identify three fibre forming polymers with their structure, properties and applications?
7. Illustrate photo degradation of polymers with example? (5X6=30)

PART-C

(Answer ***one full*** question from each module)

MODULE-I

III a) Describe functionality of monomers with unsaturation and relative functional groups? (7)

b) Calculate the molecular weight polyisoprene, if its degreeof polymerization is 5000? (4)

c) Distinguish between homo and copolymer with suitable examples? (4)

OR

IV a) Describe the effect of mono, di, polyfunctional monomers.in structure of polymers? (7)

b)Summarize the history of polymers? (4)

c) Distinguish between amorphous and crystalline polymers with examples? (4)

MODULE-II

V a) Explain the mechanism of free radical polymerization of styrene with benzoyl peroxide as initiator? (8)

b) Explain the emulsion and solution polymerization technique? (7)

OR

VI a) Explain the mechanism cationic polymerization with an example? (8)

b) Explain the bulk and suspension polymerization technique? (7)

MODULE-III

VII a) Explain the structure, properties and application ofPET and EPOXY? (8)

b) Describe general purpose and special purpose synthetic rubber? (7)

OR

VIII a) Explain the structure, properties and application of EPDM and IIR? (8)

b) Describeelastomer, thermoplastics, thermoset and fibres with examples? (7)

MODULE-IV

IX a) Describe thermal degradation and mention the factors affecting the thermal stability of polymers? (8)

b) Explain chain and random degradation of polymers with examples? (7)

OR

X a) Describe the oxidative degradation of Natural rubber? (8)

b) Explain the mechanism of stabilization of polymers by antidegradants ? (7)

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