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G – 5261

Reg. No. : .....

Name : VIPIN.....

Fourth Semester M.Sc. Degree Examination, September 2019

Polymer Chemistry

PC 241: POLYMER CHEMISTRY- IV

(2014 Admission Onwards)

Time : 3 Hours

Max. Marks : 75

SECTION – A

Answer any **two** questions among (a), (b) and (c) from each question.
Each sub question carries 2 marks

1. (a) Name metal catalyst which initiates process in Ziegler Natta Polymerization.

   (b) Give example of a polymer synthesized by ring opening metathesis polymerization.

   (c) Write a short note on controlled radical polymerization.

2. (a) Define polymer nanocomposites.

   (b) Explain ex-situ synthesis in fabrication of metal polymer nanocomposites.

   (c) State the role of linear and crosslinked structure of polymers on crosslinking.

3. (a) Explain biopolymers and biodegradable polymers.

   (b) Write down applications of genetic engineering in medicine.

   (c) What are nucleosides and nucleotides?

P.T.O.

4. (a) What is wetting and setting in adhesion?

(b) Mention modes of failure of simple adhesive joint.

(c) How are abrasion and hardness test performed on a coating?

5. (a) What is the effect of crystallinity on the mechanical properties of polymer composite?

(b) Write down applications of polysiloxane.

(c) Mention the criteria for a material to be photoconductive.

(10 × 2 = 20 Marks)

SECTION – B

Answer either (a) or (b) from **each** question and each question carries **5** marks.

(a) Explain free radical ring opening polymerization with an example of polymer synthesized using free radical ring opening polymerization.

(b) Explain plasma polymerization with an example of polymer synthesized using plasma polymerization.

(a) Write short note on polymers as reagents and reactants

(b) Describe method to functionalize polystyrene for polymer supported organic synthesis.

(a) Write a note on polypeptides and protein give an example for each.

(b) Draw the structure of RNA and explain in detail its biological significance and properties.

(a) Define: Hiding power, Glass, Abrasion, Hardness, Adhesion used in paint technology.

(b) Explain etching and wrong discharge with respect to the application in surface modification of polymers.

10. (a) Why is average molecular weight considered in polymers? Explain in detail the different average molecular weights with their formula.

(b) What is molecular weight distribution? Explain with a graphical representation.

(5 × 5 = 25 Marks)

SECTION – C

Answer **any three** questions and each question carries **10** marks.

11. State general characteristics of plasma polymers with advantage and disadvantage of plasma polymerization.

12. Describe in-situ and ex-situ process to fabricate metal polymer nanocomposites.

13. Write a brief note on applications of polymers in surgery, mention the polymers used with criteria of selection for a particular application.

14. Discuss briefly the surface grafting treatment for fluorocarbon polymers.

15. How will you select an inorganic polymer for photo conductive applications?

(3 × 10 = 30 Marks)
