

(6 pages)

Reg. No. :

Code No. : 20337 E Sub. Code : CECH 51

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2025.

Fifth Semester

Chemistry

Major Elective — POLYMER CHEMISTRY

(For those who joined in July 2021 and 2022 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

- Thermosetting polymer is
(a) Nylon (b) PVC
(c) Polyethylene (d) Bakelite
- Monomers are converted to polymer by
(a) Condensation reaction between monomers
(b) Hydrolysis of monomers
(c) Protonation of monomers
(d) None of these
- Zeiglier Natta catalyst is used in the polymerisation of _____.
(a) Vinyl acetate (b) Vinyl chloride
(c) Propylene (d) Styrene
- For condensation polymerisation _____ type of monomers are used.
(a) Bifunctional (b) Trifunctional
(c) Monofunctional (d) Ethylene
- Teflon is a polymer made from
(a) Ethylene glycol
(b) Tetra fluoro ethylene
(c) Ethylene
(d) acrylonitrile
- Condensation polymerisation of _____ produces Bakelite.
(a) Phenol and HCHO
(b) Phenol and CH₃CHO
(c) Urea and HCHO
(d) Acetone and HCHO

7. The role of plasticizers is
- (a) improve flexibility
 - (b) reduces brittleness
 - (c) reduce Tg
 - (d) all the above
8. Plastic bottles are made by _____ method.
- (a) Injection Moulding
 - (b) Blow Moulding
 - (c) Calendering
 - (d) Wet Spinning
9. The advantage of using conducting polymer in the place of metal is their _____.
- (a) cost
 - (b) light weight
 - (c) thermal conductivity
 - (d) solubility
10. Which of the following is used for making rechargeable batteries?
- (a) Poly pyrrole
 - (b) Poly ester
 - (c) Poly aniline
 - (d) Polyacrylonitrile

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PART B — (5 × 5 = 25 marks)

Answer ALL questions by choosing (a) or (b).
Each answer should not exceed 250 words.

11. (a) Define the following with example :
- (i) Monomers
 - (ii) Repeating Unit.
- Or
- (b) Describe the formula for weight average molecular weight of polymer.
12. (a) Elaborate bulk polymerisation in detail.
- Or
- (b) Describe the mechanism of free radical polymerisation.
13. (a) Discuss the synthesis and applications of silicone resin.
- Or
- (b) How Nylon 6, 6 prepared list its uses?

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[P.T.O.]

14. (a) Discuss the role of fillers in polymer.

Or

(b) Describe the process of calendaring.

15. (a) Explain the mechanism of electrical conduction in polymers.

Or

(b) Explain the synthesis and applications of poly acetylene.

PART C — (5 × 8 = 40 marks)

Answer ALL questions by choosing (a) or (b).

Each answer should not exceed 600 words.

16. (a) What is glass transition temperature? How will you determine T_g? Derive a relation between T_g and T_m.

Or

(b) Explain Addition and Condensation Polymers.

17. (a) Explain the mechanism of Ziegler Natta polymerisation.

Or

(b) Discuss the mechanism of anionic polymerisation.

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18. (a) Elaborate on constituents of Natural Rubber.

Or

(b) Give the synthesis of (i) PVC (ii) Neoprene.

19. (a) Write a note on Polymer Degradation.

Or

(b) Write about the following :

(i) Extrusion moulding

(ii) Injection moulding.

20. (a) Explain Biomedical polymers with example.

Or

(b) Explain the types of recycling polymers.

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