

Code No. : 20022 E Sub. Code : SECH 5 A/
AECH 51

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Fifth Semester

Chemistry

Major Elective — POLYMER CHEMISTRY

(For those who joined in July 2017 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

- Which of the following is a thermosetting polymer?
(a) Rubber (b) Nylon
(c) Phenolic resins (d) Polystyrene
- Which of the following polymer exhibit a lower value of molar cohesion?
(a) Wool (b) Polystyrene
(c) Silk (d) Vulcanised rubber

- The number — average molecular weight is determined by _____
(a) Osmometry. (b) Physical balance
(c) Chemical balance (d) Electrogravimetry
- The substance used in the vulcanization of rubber is
(a) Copper (b) Sulphur
(c) Chromium (d) Zinc
- Bulk polymerization requires which type of monomer?
(a) Gaseous
(b) Liquid
(c) Solid
(d) Both liquids and gaseous
- The technique used to produce polymeric films is
(a) Film casting
(b) Compression moulding
(c) Injection moulding
(d) Die casting
- The thermoplastic is
(a) cross - linking (b) insoluble
(c) amorphous (d) solid

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- In which of the following, poly propylene cannot be used?
(a) insulating cables and wires
(b) furniture
(c) automobile appliances
(d) home appliances
- Which of the following is a stable silicon bonded linkage?
(a) Si = Si (b) — Si — Si —
(c) — Si — O — Si — (d) — Si — Si — O —
- Which of the following is a conducting polymer?
(a) Polypyrrole (b) Polyaniline
(c) Polyacetylene (d) All the above

PART B — (5 × 5 = 25 marks)

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

- (a) How are polymers classified based on structure?
Or
(b) What is meant by chain polymerization? Explain it briefly with examples.

- (a) What is meant by vulcanization? Explain with example.

Or

- (b) What is meant by polymer degradation? Explain briefly the thermal and photo degradation.

- (a) What is bulk polymerization? Explain briefly.

Or

- (b) What is meant by 'Blow casting'? Give its characteristic properties.

- (a) Write down the preparation, uses and any two properties of polyester.

Or

- (b) Write down the differences between natural rubber and synthetic rubber.

- (a) What are conducting polymers? Explain briefly.

Or

- (b) Explain the properties of fire resistant polymers.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) How are polymers classified based on thermal response? Explain them with suitable examples.

Or

- (b) Based on crystallinity, how are polymers classified? Explain them in detail.

17. (a) What is meant by T_g? Explain briefly the factors affecting it.

Or

- (b) Describe the viscosity - average molecular weight and its importance.

18. (a) Discuss briefly the rotational casting processing.

Or

- (b) Explain briefly the emulsion polymerization and solution polymerization techniques.

19. (a) What are epoxy resins? How are they prepared? Write down their uses.

Or

- (b) Explain the preparation, properties and uses of PVC.

20. (a) What are biomedical polymers? Explain any three of them.

Or

- (b) What are silicones? How are they prepared? Write down their uses and properties.
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