



UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 6th Semester Examination, 2021

DSE3-CHEMISTRY

POLYMER CHEMISTRY

Full Marks: 40

ASSIGNMENT

The figures in the margin indicate full marks.

All symbols are of usual significance.

Answer any four questions from the following

10×4=40

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| 1. (a) What are polymers? How are they classified? | 1+4 |
| (b) What do you mean by thermosetting and thermoplastic polymers? Give examples. | 3 |
| (c) Write down the structure of the monomers of PAN and PTFE. | 2 |
| 2. (a) Define polymerization. Differentiate between addition and condensation polymerization. | 2+3 |
| (b) Explain the mechanism of cationic polymerization taking isobutylene as an example. | 3 |
| (c) Distinguish between inhibitors and retarders in radical polymerization with examples. | 2 |
| 3. (a) Explain the kinetics of free radical chain growth polymerization and derive the equation for the rate of polymerization. | 5 |
| (b) Explain gelation and gel point in condensation polymerization. | 3 |
| (c) What is ring opening polymerization? | 2 |
| 4. (a) What are copolymers and how are they classified? Derive the copolymer equation. | 2+3 |
| (b) What are Ziegler Natta catalysts? Discuss the mechanism of coordination polymerization of alkenes by Ziegler Natta catalysts. | 5 |
| 5. (a) Explain number-average, weight-average and viscosity-average molecular weights of polymers with proper equations. | 2+2+2 |
| (b) Describe briefly how viscosity-average molecular weight of a polymer is determined by viscometry. | 4 |
| 6. (a) Give the structure of PMMA. Discuss its properties and applications. | 1+2+2 |
| (b) Distinguish between the two types of phenol-formaldehyde resins. | 3 |
| (c) What are the major applications of poly (vinyl acetate)? | 2 |
| 7. (a) How silicone is prepared? Discuss its properties and applications. | 2+2+2 |
| (b) What are polyurethanes? | 2 |
| (c) How Nylon 6, 10 is prepared? | 2 |
| 8. (a) Discuss the preparation, properties and applications of Buna-S rubber. | 2+2+2 |
| (b) What is meant by vulcanization of rubber? Give examples of two vulcanizing agents. | 2+2 |

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