2/21

2011E708

Candidate's Seat No :_____

M.Sc Sem-3 Examination

501

Polymer Science

November-2024

Time : 2-30 Hours] **[Max. Marks : 70**

QUESTION – 1 Write the following

(i) Define polymer processing. List and explain the criteria of choosing a polymeric material for desired application? **7 MARKS**

(ii) Describe the processing techniques for thermoplastics. Explain any one technique. **7 MARKS**

OR

(i) With the help of neat diagram explain the working of a reciprocating screw injection moulding. Enlist the advantages over ram based injection molding. **7 MARKS**

(ii) Describe the blow moulding process, including its terminology, basic principles, and the difference between injection blow moulding and stretch blow moulding. **7 MARKS**

QUESTION – 2 Write the following

(i) Differentiate between compression moulding and transfer moulding. **7 MARKS**

(ii) Describe the rotational moulding process and outline its advantages and typical uses in polymer processing. **7 MARKS**

OR

(i) What is the importance of flight angle, root diameter and pitch in designing a screw in extrusion? **7 MARKS**

(ii) What is thermoforming? Explain its process and list some common applications in the thermoplastic industry. **7 MARKS**

QUESTION – 3 Write the following

(i) Explain the role of pre-polymers, curing agents, and hardeners in thermosetting plastics, and describe their importance in the curing process. **7 MARKS**

(ii) Describe the hand layup and spray-up techniques used in thermosetting plastic processing, highlighting their applications and advantages. **7 MARKS**

OR

(i) Describe filament winding technique with schematic diagram. Give its advantages, disadvantages and application. **7 MARKS**

(ii) Describe pulltrusion process with schematic diagram. Give its advantages, disadvantages and application. **7 MARKS**

(P.T.O)

QUESTION – 4 Write the following

(i) Describe different types of additives and their formulation which are used in vulcanization of rubber. **7 MARKS**

(ii) Explain the manufacturing of tyre and its parts. **7 MARKS**

OR

(i) Explain the Dry spinning and wet spinning of fibers. **7 MARKS**

(ii) Describe the general principles of finishing and dying of fibers. **7 MARKS**

QUESTION – 5 Attempt any seven out of twelve. **14 MARKS**

1. Define the role of additives in polymer processing.
2. Give process variables of injection moulding machine.
3. Define shot capacity and shot weight.
4. Define annealing and quenching.
5. Define draw down ratio.
6. Give types of heating mechanisms used in extrusion process.
7. Define fiber texturing.
8. What is MFI, and why is it important in the selection of polymer grades for processing?
9. Pot type transfer molding creates cull. (True/False)
10. Pultrusion is a continuous process. (True/False)
11. PLC stands for.....
12. Pipes and profiles can be produced by.....

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