



B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

Second Semester

FASHION TECHNOLOGY

U17CHT2009: Polymer Chemistry

COURSE OUTCOMES

- CO1:** Discuss the types of polymer formation.
CO2: Discuss the mechanism of polymer formation.
CO3: Explain the various polymerization techniques.
CO4: Discuss the polymer processing.
CO5: Discuss the fiber processing.
CO6: Outline the principles and instrumentation of spectroscopic techniques involved in material characterization.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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| 1. Define degree of polymerization and functionality. | CO1 | [K ₁] |
| 2. Differentiate between thermoplastics and thermosetting polymers. | CO1 | [K ₂] |
| 3. Explain the principle of bulk polymerization. | CO3 | [K ₂] |
| 4. What is emulsion polymerization? Give an example. | CO3 | [K ₁] |
| 5. Describe the process of film casting in polymer processing. | CO4 | [K ₂] |
| 6. What are the applications of injection moulding? | CO4 | [K ₂] |
| 7. List the characteristics of fibre-forming polymers. | CO5 | [K ₁] |
| 8. Explain the properties of Nylon 6,6. | CO5 | [K ₂] |
| 9. State Beer Lambert's law in spectroscopy. | CO6 | [K ₁] |
| 10. What is the role of a flame photometer in material characterization? | CO6 | [K ₂] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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| 11. a) Explain the classification of polymers based on their thermal properties and structure. | CO1 | [K ₂] |
| b) Discuss the free radical mechanism of polymerization with examples. | CO2 | [K ₂] |

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|-----|----|--|-----|-------------------|
| 12. | a) | Describe solution polymerization with the example of polyacrylonitrile (PAN). | CO3 | [K ₃] |
| | b) | Explain the interfacial polycondensation technique with an example. | CO3 | [K ₃] |
| 13. | a) | Compare and contrast injection moulding and extrusion moulding techniques. | CO4 | [K ₄] |
| | b) | Analyze the advantages and limitations of fibre spinning techniques. | CO4 | [K ₄] |
| 14. | a) | Describe the preparation and fibre-forming process of polyethylene. | CO5 | [K ₃] |
| | b) | Explain the properties and applications of PET. | CO5 | [K ₂] |
| 15. | a) | Outline the principle and instrumentation of IR spectroscopy. | CO6 | [K ₂] |
| | b) | Discuss the use of SEM in material characterization with its advantages. | CO6 | [K ₃] |
| 16. | a) | Analyze the effect of polymer structure on the glass transition temperature (T _g). | CO1 | [K ₄] |
| | b) | Illustrate the applications of colorimetric analysis in polymer characterization. | CO6 | [K ₃] |
