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| **University of Kerala** | | |
| Discipline:CHEMISTRY |  | Time:1Hour 30 Minutes (90Mins.) |
| Course Code:UK1MDCCHE101 |  | Total Marks:42 |
| Course Title: POLYMERS & BIOPOLYMERS |  |  |
| Type of Course: MDC |  |  |
| Semester:1 |  |  |
| Academic Level:100-199 |  |  |
| Total Credit:4, Theory: 3Credit |  |  |

**PartA.**

**6 Marks.Time:6 Minutes**

**Objective Type.1 Mark Each.**

**Answer All Questions**

**(Cognitive Level: Remember/Understand)**

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| **Qn No.** | **Question** | **Cognitive Level** | **Course Outcome (CO)** |
| 1. | What is meant by degree of polymerization? | Remember | CO-1 |
| 2. | What are the monomers present in Terylene? | Remember | CO-2 |
| 3. | Which are the monomers present in nitrile rubber? | Understand | CO-3 |
| 4. | --- polysaccharide is primarily used for energy storage in plants? | Understand | CO-4,5 |
| 5. | Give two examples for synthetic biopolymers. | Understand | CO-4,5 |
| 6. | What is the difference between a polymer and an oligomer? | Understand | CO-1 |

Part B.

8 Marks. Time: 24 Minutes

Short Answer. 2 Marks Each.

Answer All Questions

(Cognitive Level: Understand/Apply)

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| **Qn. No.** | **Question** | **Cognitive Level** | **Course Outcome (CO)** |
| 7. | Write the chemical reaction for the synthesis of nylon-6,6. | Understand | CO-1 |
| 8. | What are the properties of melamine that make it suitable for use in crockery items? | Understand | CO-2 |
| 9. | Explain the contribution of biodegradable polymers to achieving a sustainable future? | Apply | CO-3 |
| 10. | How can you apply the rubber for vulcanization? | Apply | CO-4,5 |

Part C.

28 Marks. Time: 60 Minutes

Long Answer. 7 marks each.

Answer all 4 Questions, choosing among options within each question.

(Cognitive Level: Understand/Apply)

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| **Qn. No.** | **Question** | **Cognitive Level** | **Course Outcome (CO)** |
| 11. | a) Explain how polymers can be classified based on their origin, structure, synthesis, and types of bonding, providing examples for each classification.  OR  b) What are homopolymers? Describe the preparation of polyesters, polyolefins, polyamides, and polycarbonates, by quoting an example for each. | Understand | CO-1 |
| 12. | a) Explain how will you synthesize Polyethylene, PVC, Teflon, Nylon 66 and Bakelite.  OR  b) Explain the different types of plastics labeled by the identification codes and describe the common uses and environmental impacts of each type. | Understand | CO-2 |
| 13. | a) How does the vulcanization process improve the mechanical properties of rubber and what are its applications?  OR  b) Compare and contrast the properties and applications of natural rubber and synthetic rubber. | Apply | CO-3,6 |
| 14 | a) Classify the biopolymers with suitable example?  OR  b) Compare the properties and application of cotton, wool and silk. | Apply | CO-4,5 |