

CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT



School of Engineering & Technology

Centurion
UNIVERSITY

Shaping Lives...
Empowering Communities...

Subject Name-Applied engineering materials

Subject Code -(CUTM1009)

Assignments -2 & 3

Assignment -2

1. Answer the following. (Short answer questions) (1 mark each)

- I) What is a polymer? Give a few examples of polymers.
- II) What are the monomers of PVC, TEFLON, PMMA & NYLON- 66?
- III) What is Vulcanization? What are the properties of vulcanized rubber?
- IV) What is a Homopolymer and a Copolymer? Give a few examples.
- V) What is meant by the functionality of a monomer?
- VI) What are linear & cross-linked polymers? Give a few examples.
- VII) How is PVC prepared and what are its applications?
- VIII) How is Nylon 6, 6 prepared and what are its applications?
- IX) What are the applications of Vulcanized rubber?
- X) What is condensation polymerization?

2. Answer the following. (Long answer questions) (5 marks each)

- I) Differentiate between thermosetting and thermoplastic polymers?
- II) What is the degree of polymerization? What is the molecular weight of polytetrafluoroethylene (Teflon) when the degree of polymerization is 100000?
- III) What is polymerization? Write the mechanism of free radical addition polymerization.
- IV) How are Polystyrene and PMMA prepared and what are their applications?
- V) Write preparation, structure and uses of nylon 6,6 ?
- VI) Compare addition polymerization and condensation polymerization.
- VII) Write short notes on a) Biopolymers b) Addition polymers
- VIII) Write short notes on the applications of different thermoplastic polymers.
- IX) What are Biopolymers and what are their applications?
- X) Write short notes on Copolymerization?

Assignment 3

Short answer questions (1 mark each)

1. What is a Composite?
2. What is an adhesive?
3. What is a lubricant give an example.
4. What is a Photo voltaic cell?
5. What is a galvanic cell?
6. What is a fuel cell?
7. What is the structure of the monomer of PMMA?
8. What is a secondary battery?
9. Give three applications of Lithium-ion batteries.
10. What is a nanocomposite give a few examples.

Long answer questions (5marks each)

1. Explain how polymer nanocomposite is prepared and what are the applications of polymer nanocomposite?
2. What are adhesives giving a few examples? Explain different adhesive mechanisms.
3. Discuss the synthesis of Zinc oxide nanoparticles by precipitation method.
4. What is a lithium-ion battery? Discuss the principle of the working of a lithium-ion battery.
5. What are the different approaches used for the synthesis of nanomaterials explain with examples.
6. Write short notes on any Two: - [2x2.5]
 - a) Polymer nanocomposite
 - b) Adhesives
 - c) Lithium-ion battery
7. Explain briefly about fullerenes and carbon nanotubes.
8. What is polystyrene? Explain How is it prepared and what are its applications?
9. Explain the various unique properties of nanomaterials along with their applications.
10. What is a fuel cell what are its applications? Discuss the principle of the working of a fuel cell.
11. Write about the method of preparation, properties and applications of ZnO nanoparticles.