

Module-3

5. a) In a polymer, 30% molecules have molecular mass 20,000 g/mol, 40% molecules have molecular mass 30,000 g/mol, and remaining molecules have molecular mass 60,000 g /mol. Calculate the number average and weight average molecular mass of the polymer. 07 CO3 L3
- b) How to determine the amount of HCl and CH₃COOH present in the given solution by Conductometric method. 07 CO5 L2
- c) Explain the synthesis, properties and applications of Silicone rubber. 06 CO3 L2

OR

6. a) Explain the principle, instrumentation of Colorimetry and its application in estimation of copper. 07 CO5 L2
- b) What are Conducting polymers? Explain the mechanism of conduction in polyacetylene. 07 CO3 L2
- c) Explain the synthesis, properties and applications of Kevlar Fibre. 06 CO3 L2

Module-4

7. a) What are the sensors? Explain how Electrochemical gas sensors used to detect SO_x and NO_x gases. 07 CO4 L1
- b) Explain the Construction, working and applications of Lithium ion battery. 07 CO4 L2
- c) With a neat sketch explain the measurement of dissolved oxygen by electro chemical sensors. 06 CO4 L2

OR

8. a) Define Concentration cell? A concentration cell was constructed by immersing two copper electrodes in 0.1M and 1.0M CuSO₄ solution. Write cell reactions and calculate the EMF of the cell. 07 CO4 L1
- b) Describe the construction working and application of Vanadium redox flow battery. 07 CO4 L2
- c) Explain the working principle and applications of Optical Sensors. 06 CO4 L2

Module-5

9. a) What are memory devices? Interpret the classification of electronic memory devices. 07 CO5 L2
- b) Explain the properties and applications of Organic Light Emitting Diodes. 07 CO5 L2
- c) Describe the principle, properties and applications of Quantum dot sensitized solar cells (QDSSC`s). 06 CO5 L2

OR

10. a) What are liquid crystals? Explain the classification of liquid crystals with examples. 07 CO5 L1
- b) Explain the properties and applications of Quantum Light Emitting Diodes 07 CO5 L2
- c) What are the Nanomaterials? Outline the preparation of nano materials by Sol-gel method. 06 CO5 L3
