VISHNU INSTITUTE OF TECHNOLOGY (A):: BHIMAVARM

APPLIED CEHMISTRY QUSTION BANK

UNIT 1: POLYMER CHEMISTRY

1. Write a note on a) Co-Polymerization b) Functionality c) Polymer and Polymerization
2. Explain stereo specific polymerization
3. Discuss the preparation, properties and uses of Bakelite
4. Discuss the preparation, properties and uses of UF Resin (Urea formaldehyde resin)
5. Discuss the preparation, properties and uses of Nylon 6,6
6. Discuss the preparation, properties and uses of Buna –S and Buna-N
7. Compare Thermosetting and Thermoplastic polymers
8. Write a note on Carbon fibres
9. Define conducting polymers? Explain Extrinsic conducting polymers.
10. Discuss about Intrinsic conducting polymers with examples
11. Explain the mechanism of conduction in Poly acetylene polymer
12. What is Elastomer? List out the applications of elastomers

UNIT 2: ELECTROCHEMISTRY AND APPLICATIONS

1. Discuss the construction and working of galvanic cell with a neat Sketch
2. What is meant by Reference Electrode? Discuss the construction and working of Calomel electrode.
3. Discuss the construction and working of Hydrogen Electrode with diagram
4. Derive Nernst Equation
5. What is Dry cell? Explain the construction and working of Leclanche cell
6. What is secondary cell? Discuss about construction and working of Lead – acid battery
7. Write about a) Lithium ion batteries b) Zinc –air battery
8. What is fuel cell? Explain construction and working of methanol and oxygen fuel cell
9. Define fuel cell? Explain construction and working of Hydrogen and oxygen fuel cell
10. What is Conductometric titration? Explain Conductometric titration between acids and bases
11. Write a note on Potentiometric titrations
12. Discuss about pH metry and its applications

UNIT-3: INSTRUMENTAL METHODS AND NON-CONVENTIONAL ENERGY SOURCES
PART-A: INSTRUMENTAL METHODS

1. Discuss about Beer-Lambert's Law
2. Write about Principle of UV-Visible spectroscopy
3. Discuss about various electronic transitions in UV-Visible spectroscopy
4. Write a note on NMR spectroscopy
5. Discuss about IR spectroscopy
6. Explain types of vibrations in IR spectroscopy
7. What is the principle of Chromatography and explain the procedure of Thinlayer Chromatography?
8. Write about Gas chromatography with diagram
9. What is HPLC? Explain the basic principle involved in HPLC

PART-B: NON-CONVENTIONAL ENERGY SOURCES

1. Differentiate between Conventional and Non-conventional energy sources (Non-renewable and Renewable energy sources)
2. What is solar energy? List out the applications of Solar energy.
3. What is a solar cell? Explain the construction and working of PV cell.
4. Write a short note on advantages and disadvantages of solar energy
5. What is Hydropower? Discuss the design of hydropower plant with a neat sketch.
6. Define Geothermal energy? Explain the construction and working of geothermal power plant with a neat schematic diagram.
7. Discuss about biomass energy
8. Write the design and working of tidal power.

UNIT –4: SOLID STATE CHEMISTRY

1. What is solid compound? Differentiate crystalline and amorphous solids.
2. Write short note on Crystal defects (Frenkel and Schottky defects)
3. Explain hall effect and its applications
4. What are insulators? Write about electrical applications of insulators.
5. What are semi-conductors? Explain different types of semi-conductors.
6. Explain Zone refining and distillation methods for the preparation of semiconductors.
7. b) Explain Czochralski crystal pulling technique for the preparation of semiconductors.
8. Write a short note on
   a) Intrinsic semi-conductors
   b) Extrinsic semiconductors
9. Explain the structures of spinel and inverse spinel.
10. Explain Epitaxy and diffusion Doping techniques.
11. Write a short on
    a) Ion implantation Doping technique
    b) Applications of semi-conductors

UNIT-5: MATERIAL CHEMISTRY

1. What is Nano material? Explain about Top-down and Bottom-up approaches in the preparation of Nano materials
2. Explain sol-gel method for preparation of nanoparticles.
3. What are Nano materials. How to characterize nano materials by BET, TEM methods.
4. Write a note on Carbon nanotubes and its applications
5. Explain the preparation of Carbon nanotubes by Arc discharge method
6. Explain the preparation of Carbon nanotubes by Laser ablation method
7. Explain the preparation of Carbon nanotubes by Chemical vapor deposition method
8. Write about SWCNT and MWCNT
9. What are fullerenes? Discuss its properties and applications
10. Discuss Type – I and Type II superconductors.
11. What are superconductors? Write their properties and applications.
12. What are liquid crystals? Discuss the types of thermotropic liquid crystals. Write any five applications of liquid crystals.
13. What is Green chemistry? Explain the principles of green chemistry.
14. Discuss about applications of Green chemistry