P.B.SIDDHARTHA COLLEGE OF ARTS & SCIENCE
DEPARTMENT OF CHEMISTRY
M.Sc – CHEMISTRY (ORGANIC CHEMISTRY)
III SEMESTER

Paper Code & Title: 22 OECH 301 :POLYMER CHEMISTRY

No. of hours per week: 03 **Total credits: 03**
Total marks: 100 **(Internal: 30 M & External: 70M)**

Unit-I

Introduction, Classification of polymers, Polymerization, chain polymerization, step polymerization, Co polymerization, Free radical chain polymerization, cationic polymerization, anionic polymerization, Polymerization Techniques, Graft and Block Copolymers.

Unit-II

Polymer Synthesis,Isolation and Purification of polymers, Polymer Fractionation, Molecular weight determination,Molecular weight determination curve, Processing Techniques.

Unit-III

Polymer Reactions–Introduction, Hydrolysis, Acidolysis, Aminolysis, Hydrogenation, Addition and Substitution Reactions, Cyclisation reactions, Cross-linking Reactions.

Unit-IV

Polymer Degradation – Definition, Types of Degradation, Thermal Degradation, Mechanical Degradation, Degradation by Ultrasonic Waves, Photodegradation, Degradation by High-Energy Radiation, Oxidative Degradation, Hydrolytic Degradation.

Unit-V

Plastics, Fibres, Elastomers-Polyethylene, Polystyrene, PolyEsters, PolyAcrylonitrile Polyurethanes, Polyvinyl Chloride, Polyisoprenes. Resins–Phenol Formaldehyde Resin, Urea Formaldehyde and Melamine–Formaldehyde Resins,Epoxy Polymers, Silicon Polymers.

Reference Books:

1. TextbookofPolymerSciencebyFrod,W.Billmayer,

2. An IntroductiontoPolymerChemistrybyMoore.

3. PolymerChemistry-AnIntroductionbyM.P.Stevens.

4. PolymerScience –VRGowariker,NVViswanathan,JayadevSreedhar.