

PARVATIBAI CHOWGULE COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS), MARGAO-GOA

POGIL WORKSHEET

THERMODYNAMICS OF FREE RADICAL POLYMERISATION

Class: S. Y. B. Sc.

Semester: IV

Subject: Chemistry

Paper: CHE-IV. E-6 Polymer and Colloid Science

Free radical polymerization proceeds through three steps.

Gibbs free energy change is used to predict the feasibility of a process.

Prerequisites: Chemical Thermodynamics, Chemical equilibrium, Chemical kinetics, Polymerisation

1. State the three steps involved in free radical polymerization.

2. State the symbols for Enthalpy, Entropy and Gibbs free energy?

3. Are the above functions State functions? Justify your answer.

4. Identify the relation between Gibbs free energy and enthalpy?

5. Comment on the heat involved in initiation and propagation steps.

6. Predict Gibbs free energy change (ΔG_p) for polymerization process if ΔH_p is heat of polymerization and ΔS_p is entropy of polymerization.

7. If E_p is energy of activation of polymerization and E_{dp} is energy of activation of depolymerization, predict value of heat of polymerization.

8. Is heat of polymerization positive or negative? Justify your answer.

9. Is entropy of polymerization positive or negative? Justify your answer.

10. Will Gibbs free energy change (ΔG_p) be positive or negative? Justify your answer.

