

**DEPARTMENT OF SCIENCE AND HUMANITIES  
CY21 51- ENGINEERING CHEMISTRY-I  
QUESTION BANK  
PART-B  
UNIT-I  
POLYMER CHEMISTRY**

1. Write in brief on classification of polymers
2. Write in detail on epoxy resin
3. Explain bulk polymerization technique
4. Discuss cationic polymerisation mechanism
5. Compare thermoplastics with thermosetting plastics
6. Discuss free radical polymerization mechanism
7. Write any three properties of nylon 6,6
8. Write in detail on epoxy resin

**UNIT-2  
CHEMICAL THERMODYNAMICS**

1. Derive an expression for the entropy change of an ideal gas.
2. Explain Clausius inequality.
3. Derive any two Maxwell relations.
4. Compare reversible process with irreversible process.
5. Derive an expression for the entropy change for an irreversible process.
6. Write the expression of work function.
7. Derive van Hoff isotherm.
8. Discuss the criteria of spontaneity.

**UNIT-3  
PHOTOCHEMISTRY AND SPECTROSCOPY**

1. State and explain Stark-Einstein Law.
2. Compare fluorescence with phosphorescence.
3. Explain the Block Diagram of IR spectrometer.
4. Write down the various Electronic Transitions.
5. Explain Chemiluminescence with example.
6. Derive Beer's law.
7. How will you determine the quantum efficiency?
8. Explain Photosensitisation.
9. Calculate the IR active bands for  $\text{H}_2\text{O}$ ,  $\text{C}_2\text{H}_4$ ,  $\text{HCl}$ .

**UNIT-4  
PHASE RULE & ALLOYS**

1. State phase rule and explain the terms.
2. Discuss any three heat treatments of steel.
3. What is Nichrome? Mention its uses.
4. Discuss Pb-Ag system.
5. Discuss Water system in detail.

6. Describe Zn-Mg System.
7. Write in brief on Stainless steel.
8. Write in brief on bronze.

**UNIT-5**  
**NANOCHEMISTRY**

1. Explain size dependent properties.
2. Describe hydrothermal method of nanomaterial Synthesis.
3. Explain precipitation chemical vapor deposition methods of nanomaterial synthesis.
4. Write an explanatory note on nanocluster, nanorod & nonotube.
5. Write the salient properties of nanomaterials.
6. Explain Laser- Ablation Method.
7. Write any four applications of nanomaterials.