6. Write the short notes on the following : (5,5,5)

(i) Degree of Polymerization

(ii) Bakelite

(iii) Cationic Polymerization



[This question paper contains 4 printed pages.]

**Your Roll No.....**

**Sr. No. of Question Paper : 8051** **J**

Unique Paper Code : 2174001208

Name of the Paper : GE: BASICS OF POLYMER CHEMISTRY

Name of the Course : **All Undergraduate Courses except with Chemistry Discipline**

Semester : II/1V/VI

Duration : 2 Hours Maximum Marks : 60

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **four** questions in all.
3. Each question carries **15** marks.

1. (a) Identify the following polymers as homopolymer or copolymer and write the structure of repeating unit (**any two**) :

   (i) Nylon 6

   (ii) PVC

   (iii) Novalac

   (b) Define the Glass transition temperature (Tg) and write the factors affecting glass transition temperature.

   (c) What is functionality? How does functionality affect the nature of polymer? (5,5,5)

2. (a) Draw the structures of isotactic, syndiotactic and atactic polypropylene.

   (b) How does the texture of polymer change with temperature and intermolecular forces? Explain.

   (c) Explain any two mechanical properties of the polymers. (5,5,5)



3. (a) How Nylon 6 is synthesized? Explain its applications.

   (b) Write a short note on the synthesis and applications of silicon polymers.

   (c) What are fluoro polymers? Discuss the properties and applications. (5,5,5)

4. (a) Explain about the thermal and mechanical properties of Bakelite and Novalac.

   (b) $M_n$ of Ploystyrene is 4,16,000. What is the value of degree of polymerization?

   (c) How does molecular weight influence the polymer solubility? (5,5,5)

5. (a) Explain with reaction how do polyethylene produced using Ziegler-natta catalyst differ from polyethylene produced using free radical initiators.

   (b) Differentiate between $T_g$, $T_m$ and $T_c$ of polymers.

   (c) Discuss the differences between Crystalline and Amorphous polymer. (5,5,5)