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**PG3S-414-A-23**  
**M.Sc. III Semester Degree Examination**  
**MATERIALS SCIENCE**  
**Polymer Science and Technology**  
**Paper -OET- 3.1**

**Time : 3 Hours**

**Maximum Marks : 80**

*Instructions to Candidates:*

1. *Answer the questions as per the instructions.*

**PART - A**

Answer any **EIGHT** of the following.

**(8×2=16)**

1.
  - i) Expand IPN.
  - ii) Define degree of polymerization of polymers.
  - iii) Write few commercial applications of PMMA polymer.
  - iv) What is synthetic rubber?
  - v) What are thermosetting plastics?
  - vi) Write a brief note on Acrylics.
  - vii) Define the glass transition temperature of polymers.
  - viii) Write a brief note on ABS rubber.
  - ix) Mention the standardization techniques of plastics.
  - x) Write a brief note on size and skin dimensions.

**PART - B**

Answer any **FOUR** of the following.

**(4×7=28)**

2. Explain the classification of polymers based upon their structure.
3. What are polymer blends? Write their classification.
4. Explain the important properties of PVC and PE polymers.

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**(1)**

**[Contd....**

5. Explain the viscosity average method for determination of molecular weight of polymers.
6. Describe the thermal technique to determine  $T_g$  of polymers.
7. Describe bulk polymerization of polystyrene.

**PART - C**

Answer any **THREE** of the following.

**(3×12=36)**

8. Discuss the manufacturing method properties of PMMA.
9. Distinguish between amorphous, crystalline and rubbery polymers.
10. Describe the structure-property relationship in polymers.
11. Write the different methods to identify plastics.

12. Write a short note on any **TWO** of the following.

**(2×6=12)**

- i) Emulsion polymerization
  - ii) Polyurethane
  - iii) Chemical testing of plastics
  - iv) SBR
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