

22354

**11920**

**3 Hours / 70 Marks**

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Solve any FIVE of the following :**

**10**

- (a) Differentiate between HDPE and LDPE with respect to structure and properties.
- (b) Define cellulose. State its sources.
- (c) Enlist any four engineering plastics.
- (d) Identify the thermosetting plastics used to make : (i) Cookware handle  
(ii) Electrical sockets.
- (e) Name the speciality plastic used in aerospace application along with reason.
- (f) Enlist any four additives which are used as property modifiers.
- (g) State the compounding equipment used for (i) PVC compounding, (ii) Colour masterbatch mixing.

- 2. Solve any THREE of the following :** **12**
- (a) State any four properties and applications each of the expanded polystyrene.
  - (b) Explain the manufacturing of polyphenyleneoxide.
  - (c) State outstanding properties and important applications of SAN.
  - (d) Explain working of Banbury mixer with neat sketch.
- 3. Solve any THREE of the following :** **12**
- (a) Explain the manufacturing of PP.
  - (b) State important properties of PMMA.
  - (c) Describe manufacturing of ABS.
  - (d) State important properties and applications of Melamine Formaldehyde.
- 4. Solve any THREE of the following :** **12**
- (a) Explain the manufacturing of PBT.
  - (b) State important properties and applications of Nylon-6.
  - (c) Justify the use of PTFE for coating of non-stick cookware.
  - (d) Describe the manufacturing of silicone.
  - (e) Explain selection criteria of blowing agent.
- 5. Solve any TWO of the following :** **12**
- (a) Identify the applications of following commodity plastics :
    - (i) PE (ii) Polyacrylonitrile (iii) Polyvinyl acetate
  - (b) Identify the additive used to modify –
    - (i) UV stability (ii) Impact strength (iii) Cost reductionState their role and one example each.
  - (c) Identify the compounding equipment applied for internal intensive mixing of rubbery material and explain its construction and working with neat sketch.

**6. Solve any TWO of the following :****12**

- (a) Complete the following table by identifying plastic used for given application alongwith property responsible for it :

<b>Application</b>	<b>Plastic used</b>	<b>Property responsible</b>
(1) Plumbing pipe		
(2) Mineral water bottle		
(3) Spectacle frame		
(4) Water soluble adhesive		
(5) Automotive light reflection		
(6) Toothpaste tubes		

- (b) Identify the thermosetting plastic that can be used to manufacture flexible products as well as rigid products. Justify the reason behind this in detail.
- (c) Represent the structure and state important applications (any two) of –
- (i) EVA, (ii) PPS, (iii) Polyamide-imide
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