

22457

24225

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. **Attempt any FIVE of the following :** **10**
- a) Describe the term ‘Regenerated Fibres’.
 - b) Enlist the spinning methods used for fibre manufacturing process.
 - c) Draw the process flow chart for viscose rayon manufacturing.
 - d) Write the name and chemical structure of raw material used for manufacturing polyester fibre.
 - e) Write the name and chemical structure of raw materials used for Nylon 66 fibre manufacturing.
 - f) State the % of monomer and co-monomer used in modacrylic fibre.
 - g) State any two physical properties of LDPE.

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- 2. Attempt any THREE of the following :** **12**
- a) With neat labelled sketch. Explain dry spinning process.
 - b) List the name of additives used in viscose rayon manufacturing process and their functions.
 - c) With process flow chart, explain the steps in Acetate rayon manufacturing process.
 - d) Explain melt spinning process of polyester fibre with a neat labelled diagram.
- 3. Attempt any THREE of the following :** **12**
- a) Describe the polymer characteristics and concept of direct melt spinning.
 - b) State advantages of Lyocell process. Also write the name and chemical formula of solvent used for the same.
 - c) Describe the term microfibres, state four applications of polyester microfibre.
 - d) Explain in brief steps involved in carbon fibre manufacturing.
- 4. Attempt any THREE of the following :** **12**
- a) Describe the process of fibre formation in wet spinning of viscose rayon.
 - b) Elaborate the steps involved in polyester fibre manufacturing, also write the chemical reactions involved in it.
 - c) Describe with readings the synthesis of E-caprolactum.
 - d) Explain the polymerisation process used for acrylic fibre manufacturing.
 - e) Differentiate between LDPE and HDPE on the basis of spinning parameters and physical properties. (Any four points)

5. Attempt any TWO of the following : 12

- a) Describe solidification process of polymers in melt spinning, also state basic requirements of polymer to be melt spun.
- b) Explain the steps involved in Nylon6,6 fibre manufacturing process, with chemical reactions.
- c) 'Acrylic fibre cannot be melt spun' Justify the statement, suggest and explain the appropriate spinning method of acrylic fibres.

6. Attempt any TWO of the following : 12

- a) Describe the modifications done in spinning for manufacturing hydrophillic nylons. State any four applications of hydrophillic nylons.
 - b) Describe the modifications done in spinning for –
 - i) Low Pilling Acrylic
 - ii) Bi-Component fibres.
 - c) Describe the manufacturing process of Lycra fibre, state four applications of Lycra fibre.
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