

313343

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 answer with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Assume suitable data, if necessary.
  - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (7) 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) Write the full form of 'HOY' and 'FOY'.
  - b) Draw the L.S. and T.S. of polyester and viscose Rayon.
  - c) Write the standard moisture content of polyester and Nylon fibres.
  - d) Draw the chemical structure of monomers used in the manufacturing of Nylon 6.
  - e) Enlist the polymerisation techniques adopted in the manufacturing of acrylic fibres.
  - f) Enlist four physical properties of Acrylic fibres.
  - g) State the specific gravity of HDPE and LDPE.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Elaborate the Dry Spinning method with the help of a neat labelled diagram.
  - b) Describe the procedure for identification of fibre by microscopic method.
  - c) Describe the procedure to determine the accessible regions of polyester by using iodine absorption method.
  - d) Write two physical properties and two uses of Nylon 6.6 fibre.
- 3. Attempt any THREE of the following:** **12**
- a) State the spinning parameters of –
    - i) LOY
    - ii) MOY
    - iii) POY
    - iv) FOY.
  - b) Elaborate the raw material synthesis of –
    - i) Hexamethylene diamine and
    - ii) Adipic acid.
  - c) Describe for manufacturing Nylon 66 for process of Nylon 6 with neat sketch.
  - d) Describe the spinning method with the help of a labelled flow chart used in the manufacturing of acrylic fibres.
- 4. Attempt any THREE of the following:** **12**
- a) Elaborate the drawing techniques adopted in the manufacturing of synthetic fibres.
  - b) Demonstrate the functions of additives used in the manufacturing of viscose Rayon fibres.
  - c) Describe the process for chemical identification of fibre.
  - d) Elaborate the applications of flame retardant and bi-component modified acrylic fibres.
  - e) Elaborate the manufacturing of carbon fibres according based on PAN as a precursor.

**5. Attempt any TWO of the following:****12**

- a) Describe with a neat labelled sketch of wet spinning process. Also describe process of polymer solidification in wet spinning.
- b) Analyse the process flow chart of Lyocell fibres along with the function of various additives. Focus the key features of Lyocell fibres. w.r.t. environment.
- c) Briefly explain applications of –
  - i) Microfibres
  - ii) Cationic dyeable polyester.

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

- a) Describe the modifications done in manufacturing of –
    - i) Differentially dyeable Nylon.
    - ii) Hydrophillic Nylon.
  - b) Describe the method for quantitative analysis of acrylic fibre from the binary blended fabric sample.
  - c) Describe the raw material and manufacturing process of polyethylene fibres with the help of a neat labelled flow chart.
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