

# 22457

**22223**

**3 Hours / 70 Marks**

Seat No.

--	--	--	--	--	--	--	--

- 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****
- Define the term 'Regenerated fibres'.
  - List the basic requirement of dry spinning process.
  - Write the process flow chart for Viscose Rayon manufacturing process.
  - Write the chemical structures of monomer used for polyester manufacturing.
  - List the raw material used for manufacturing acrylic fibre and draw its structures.
  - Describe the term 'Modacrylic Fibres'
  - List the names of four industrial fibres.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) With neat sketch explain melt spinning equipment.
  - b) Describe the microscopic method to identify regenerated fibres.
  - c) Describe condensation polymerisation process of polyester.
  - d) Write the reactions of any two methods for Raw Material synthesis of caprolactum.
- 3. Attempt any THREE of the following:** **12**
- a) Describe the term
    - i) POY and
    - ii) FOY Mention the spinning speed required for it and give any two end uses.
  - b) Describe the dry spinning process for lyocell fibres.
  - c) Explain raw material synthesis of Adipic Acid by two methods.
  - d) Discuss any four applications of acrylic fibres.
- 4. Attempt any THREE of the following:** **12**
- a) Explain the modifications done in spinnerette for manufacturing Hollow polyester fibre.
  - b) Write two chemical properties and two uses of Nylon 66 Fibre.
  - c) List the name of different Co-polymers used for mod-acrylic fibres. Also explain effect of copolymer on fibre properties.
  - d) With Process and reactions, explain manufacturing of polyethylene fibre.
  - e) Write the monomer used and the composition of polyurethane fibre. Also give uses of polyurethane fibre.

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

- a) With neat diagram explain solidification process in wet spinning. Also discuss the factors affecting solidifications process.
- b) Describe the modifications done in spinneret size and shape for manufacturing polyester microfiber. Also enlist the different methods of manufacturing microfibres.
- c) 'Acrylic' is a synthetic fibre but can not be spun by melt spinning justify the statement. Also give its manufacturing method.

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

- a) Explain acetylation process carried out while manufacturing acetate rayon. Also discuss types of acetylation.
  - b) Explain in brief 'different types of Nylons' manufactured. Also state their uses.
  - c) Describe manufacturing process of carbon fibre by using polyacrylonitrile as a precursor.
-