313343

12526

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 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.

(8) Use of Steam tables, logarithmic, Mollier's chart is permitted.

Marks

1. Attempt any FIVE of the following: **10**

a) Give the formula for determination of moisture content of textile fibre.

b) Define the term :–

i) Polymer

ii) Degree of polymerisation.

c) List the name of additives used for manufacturing of Lyocell fibre.

d) List the names of raw materials used for manufacturing Nylon 6.6.

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Marks

e) List the name of raw materials used for manufacturing polymer fibre.

f) List names of various copolymers used for manufacturing modacrylic fibres.

g) State end uses of Acrylic fibres.

2. Attempt any THREE of the following: **12**

a) Describe polymer characteristics of polymer for being melt spun.

b) Describe manufacturing process of Lyocell fibre with the help of a flow chart.

c) Explain steps involved in manufacturing of polyester with the help of a flow chart.

d) State two physical, properties and two end uses of Lycra fibres.

3. Attempt any THREE of the following: **12**

a) Describe working of melt spinning equipment with suitable sketch.

b) Describe manufacturing of secondary acetate rayon with the help of a flow chart.

c) Describe procedure to perform quantitative analysis of acrylic fiber from a given binary blended fabric sample.

d) Describe the polymerisation process of polyethylene fibre.

Marks

4. Attempt any THREE of the following: **12**

a) Describe polymer characteristics of polymer solidification of the polymer for being spun by dry spinning technique.

b) Describe the spinning parameters for melt spinning of Nylon 6 fibre.

c) Describe the manufacturing of Nylon 66 with a process flow chart.

d) Describe spinning of Acrylic fibres with the help of process flow chart.

e) With the help of a process flow chart explain the manufacturing of carbon fiber using PAN precursor. State end uses of carbon fibers.

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

a) Describe the concept of direct melt spinning technique. Explain the requirement of spinning speeds to produce LOY, MOY, POY, HOY and FOY yarns.

b) Describe the manufacturing of viscose rayon with the help of a process flow chart. Explain the wet spinning technique in detail with respect to :–

i) labelled diagram

ii) solvents used in the coagulating bath

iii) their concentrations used

iv) regeneration of filaments

v) post spinning operations.

c) Describe manufacturing of polyester with the help of a process flow chart. Elaborate on spinning parameters, additives used, physical and chemical properties.

Marks

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

a) Elaborate on modification in manufacturing process to produce :–

i) Microdenier polyester

ii) Hydropholic polyester fiber

iii) Cationic dyeable polyester.

State physical and chemical properties of these modified polyesters in brief.

b) Describe modifications carried out to produce :–

i) Antistatic Nylons

ii) Low pilling Nylons

iii) Flame retardant Nylons.

State physical and chemical properties of the above modified Nylons in brief.

c) Explain modification in manufacturing :–

i) Flame retardant Acrylic fibers

ii) Flame retardant Acrylic fibers.

iii) Bi componant Acrylic fibers.

State applications of above modified Acrylic Fibers.
