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Printed Pages : 5

34059

BT-4 / M-18
TEXTILE FIBRE -II
Paper–TT–210A

Time allowed : 3 hours] *[Maximum marks : 100*

Section–A

Note :- Attempt all questions. *20×1=20*

(a) Degree of polymerization means
  (i) Number of polymer molecules
  (ii) Number of bonds in the molecule
  (iii) Number of repeat units
  (iv) Number of functional groups in the molecule

(b) Drawing results in
  (i) Improved orientation
  (ii) Reduced strength
  (iii) Improved lustre
  (iv) Increased denier

(c) Glass transition temperature associates with
  (i) Amorphous region
  (ii) Crystalline region
  (iii) Both amorphous and Crystalline region
  (iv) Functional groups in polymer.

(d) Heat setting under tension generally
  (i) Increases tenacity
  (ii) Reduces crystallinity

  (iii) Reduces molecular orientation
  (iv) Increases denier of fibre

(e) Ratio of length to diameter of spinnable fibre should be at least equal to
  (i) 1 (ii) 10 (iii) 100 (iv) 1000

(f) Which of the following is a primary variable in melt spinning?
  (i) Extrusion temperature
  (ii) Denier of filament
  (iii) Tensile force at take-up device
  (iv) Average extrusion velocity

(g) Dry spinning involves
  (i) One way mass transfer
  (ii) Two way mass transfer
  (iii) Three way mass transfer
  (iv) Four way mass transfer.

(h) Polyester is produced from
  (i) DMT and PTA (ii) DMT and MEG
  (iii) PTA and DGT (iv) DGT and DMT

(i) Production of raw white polyester necessitates.
  (i) Germanium oxide (ii) Ferric oxide
  (iii) Acetic acid (iv) Nitric acid

(j) Which of the following is not formed by addition polymerization?

(i) Nylon (ii) Polypropylene

(iii) Acrylic (iv) Polyester

(k) Acrylonitrile in acrylic fibre is

(i) Less than 85% (ii) At least 35%

(iii) At least 85% (iv) Less than 65%

(l) Gel spinning associates with polymer of

(i) Low molecular weight

(ii) High molecular weight

(iii) Medium molecular weight

(iv) Ultra-high molecular weight

(m) Which of the following is not a step in Polymerization of polypropylene?

(i) Initiation (ii) Termination

(iii) Condensation (iv) Propagation

(n) Gas phase polymerization takes place in

(i) Gaseous phase (ii) Liquid phase

(iii) Semi-liquid phase (iv) Solid and gaseous phase

(o) Zieglar – Natta catalyst is related to

(i) Nylon 6 (ii) Polyester

(iii) Polypropylene (iv) Acrylic

(p) What is elastomer?

(q) Name the fibre whose density is less than unity.

(r) In which step of polymerization, formation of DEG becomes maximum?

(s) What is manifold and its function?

(t) What is the importance of drawing?

Section–B

Note :- Attempt any one question.

2. (a) Discuss homopolymers, copolymers, thermosets, thermoplastic and elastomers with their characteristics along with suitable examples. 10

(b) Discuss the significance of glass transition temperature and melting point of a polymer. Also, highlight the factors which influence glass transition and melting temperature of a polymer. 10

3. (a) Discuss suspension and emulsion polymerization with suitable examples. 10

(b) Discuss the mechanism of condensation and gas phase polymerization technique. 10

Section–C

Note :- Attempt any one question.

4. Discuss the steps in polymerization to produce polyester via DMT route along with its advantages and disadvantages over TPA route. 20

5. Discuss polymerisation of polypropylene by suspension and gas phase polymerization techniques in detail. 20

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Section–D

Note :- Attempt any one question.

6. (a) Draw a neat diagram of melt spinning line and briefly describe the function of each unit. 10

   (b) Discuss various factors affecting the extrusion and fibre formation and their impact on structure and properties of fibres.

7. (a) Explain the influence of spinneret size, rate of extrusion and spinning stretch on structure and properties of filaments. 10

   (b) Discuss different types of quenching techniques along with their respective merits and demerits. 10

Section–E

Note :- Attempt any one question.

8. (a) How do dry spinning, wet spinning and dry-jet-wet spinning differ? Also, highlight their suitability with reference to specific fibres. 10

   (b) Explain the process involved for viscose rayon production, in detail. 10

9. (a) Describe the wet and dry spinning process for manufacturing of acrylic fibres. 10

   (b) Explain how drawing and heat setting is carried out with reference to specific fibres. 10