

3. How polypropylene is produced from propylene gas ? Mention two methods of polymerisation alongwith the reactions. 15

SECTION—C

4. Explain a melt spinning process in detail. What advantages are obtained with dry-jet-wet spinning as compared to normal wet spinning method. 10+5

5. What do you mean by spin-stretch and how it affects the filament structure ? Explain a wet spinning method in details. What is the need for drawing of filaments ? 5+7+3

SECTION—D

6. Explain the effect of different process parameters on twist textured yarn properties. Discuss the principles of knit-de-knit method of texturing. 10+5

7. Describe stuffer-box texturing alongwith the yarn properties obtained therefrom. Discuss the mechanism of twist texturing in details. 9+6

SECTION—E

8. Discuss a draw texturing machine utilising friction method of twisting. Discuss the mechanism of loop formation in airjet texturing. 9+6

9. What are the similarities between thermomechanical and chemomechanical texturing. Compare the properties of the yarns obtained from these two processes. How the instability of airjet textured yarns can be measured ? 9+6

Roll No.

Total No. of Pages : 4

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MAN MADE FIBRES TECHNOLOGY

Paper : TM-210

[Time : Three Hours]

[Maximum Marks : 75]

Note :— Question No. 1 is compulsory. Attempt ONE question each from Sections B, C, D & E.

SECTION—A

1. (a) We can achieve circular cross-section of filament by :

- (i) Dry-jet wet spinning
- (ii) Wet spinning
- (iii) Dry spinning
- (iv) Melt spinning

- (b) Void formation is a criteria of spinning of :

- (i) Polyester
- (ii) Nylon
- (iii) Acrylic
- (iv) Polypropylene

- (c) Which of the following is not a stereospecificity of pp ?

- (i) Isotacticity
- (ii) Syndiotacticity
- (iii) Paratacticity
- (iv) Atacticity

- (d) Which of the following is an important property of twist textured yarn ?
- Physical bulk
 - Instability
 - Crimp rigidity
 - Unevenness
- (e) Airjet texturing is a _____ texturing process :
- Thermomechanical
 - Mechanical
 - Chemomechanical
 - Chemical
- (f) POY is produced at a spinning speed of :
- 1000—2500 m/min
 - 2500—4000 m/min
 - 4000—6000 m/min
 - 6000—8000 m/min
- (g) Free annealing of a fibre :
- reduces molecular orientation
 - increases tenacity
 - reduces diameter
 - reduces denier
- (h) The neutral co-monomer used for polymerisation of acrylic is :
- Vinyl acetate
 - Sodium methylallyl sulfonate
- (iii) Vinyl Chloride
- (iv) Vinyl bromide
- (i) The range of temperature in the 1st and 2nd VK tube for polymerisation of nylon 6 is :
- 230°—245°C and 250°—265°C respectively
 - 245°—265°C and 225°—250°C respectively
 - 225°—250°C and 245°—265°C respectively
 - 250°—265°C and 230°—245°C respectively
- (j) Hexamethylene diamine is a monomer for polymerisation of :
- Polyester
 - Acrylic
 - Nylon 6
 - Nylon 66
- (k) What type of catalyst is used for polymerisation of polyester ?
- (l) Define 'acrylic' fibre.
- (m) What are the process variables of twist texturing process ?
- (n) What is the objective of ageing process in viscose rayon manufacturing ?
- (o) 'Solvent textured yarns have higher dye uptake and lower tenacity than thermomechanically textured yarns'—true or false.
- IS
- SECTION—B**
2. Discuss the production of polyethylene terephthalate polymer along with the production of its monomer.
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