

17341

21718

3 Hours / 100 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 answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.

Marks

1. Attempt any FIVE of the following :

20

- (a) Enlist the steps involved in the fibre manufacturing process.
- (b) Describe the term :
 - (i) LOY
 - (ii) MOY
- (c) Explain the synthesis of TPA by any one method.
- (d) Explain modification done in manufacturing process of flame retardant polyester fibre.
- (e) Write two physical and two chemical properties of Nylon 6.
- (f) Define Mudacrylic fibre.
- (g) State four industrial applications of carbon fibre.

2. Attempt any TWO of the following :**16**

- (a) With neat sketch, explain working of melt spinning equipment.
- (b) Enlist the general features of melt spinning process. Also explain fibre structure formation in melt spinning.
- (c) Explain synthesis of ethylene glycol by one method. Also explain transesterification reaction in polyester manufacturing process.

3. Attempt any TWO of the following :**16**

- (a) Differentiate between direct melt spinning and indirect melt spinning. Also state advantages of direct melt spinning process.
- (b) What are PET micro fibres ? Explain any two modification done in spinnerets for obtaining them.
- (c) Explain the role of :
 - (i) Quenching zone in melt spinning.
 - (ii) Additives in cationic dyeable polyester.

4. Attempt any TWO of the following :**16**

- (a) Explain synthesis of caprolactum by two methods.
- (b) Explain polymerisation process of acrylic fibre by solution polymerisation technique.
- (c) Describe :
 - (i) Significant properties of differential dyeable Nylon
 - (ii) Uses of acrylic fibre

5. Attempt any TWO of the following :**16**

- (a) Explain synthesis of :
 - (i) Adipic acid and
 - (ii) Hexamethylene diamine by one method
- (b) Explain wet spinning process of acrylic fibre.
- (c) Describe :
 - (i) Modifications done in manufacturing process of hydrophilic Nylon.
 - (ii) Chemical properties of acrylic fibre.

6. Attempt any TWO of the following :**16**

- (a) Explain manufacturing process of carbon fibre by using polyacrylonitrile (PAN) as precursor.
 - (b) Differentiate between LDPE and HDPE, also give uses of polyethylene fibre.
 - (c) Explain :
 - (i) Four industrial applications of glass fibre.
 - (ii) Polymer composition of lycra fibre.
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