12425

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)   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)   Define metric count. Give expression (formula) for the same.

(b)   A cotton yarn cone of 40^s count weighs 2 kg, find out the length of yarn it contains.

(c)   Explain the term 'Serviceability' and 'Wear'.

(d)   Explain standard method used for determination of fabric width.

(e)   Define Air Permeability.

(f)   Define waterproof and shower proof fabric.

(g)   A 2.5 denier fiber breaks at a load of 17.5 grams. Calculate its tenacity in both gm/tex and gm/denier.

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

   (a) (i)   A worsted yarn cone of 32^s worsted weighs 1.5 kg. Calculate the length of yarn it contains.

       (ii) A polyester filament yarn lea of 100 metre weighs 2 grams. Calculate the denier and tex of the yarn.

   (b) With the help of a diagram explain precautions to be taken while cutting fabric samples from fabric for tensile strength testing.

   (c) Elaborate various factors responsible for abrasion resistance of fabric.

   (d) With the help of a neat sketch, explain how air permeability of a given fabric sample can be tested using air permeability tester.

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

   (a) Describe method to ascertain count of warp or weft of a fabric by Beesley Balance Method.

   (b) Describe procedure to ascertain warp way and weft way shrinkage of a fabric. State the importance of this test from garment manufacturing point of view.

   (c) Explain concept of pilling. State various causes of pilling.

   (d) Define water proof, shower proof and water repellent fabric. Elaborate basic concept of wetting.

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

   (a) Elaborate the determination of abrasion resistance of a fabric using Martindale's abrasion test with the help of a diagram.

   (b) Explain the method used to determine crease recovery of a fabric by crease recovery tester.

   (c) Explain the terms – Elongation, mass stress and elastic recovery.

   (d) Explain constant rate of extension principle of tensile strength testing.

   (e) Elaborate procedure to determine single thread strength of a given fabric.

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

   (a) (i)   Elaborate the concept of optimum twist factor.   **2**

        (ii) Elaborate the method to determine twist in double yarn by untwisting principle.   **4**

   (b) (i)   Calculate the cover factor of fabric having following particulars :   **4**

           Ends/inch = 60

           Picks/inch = 48

           Warp count = $2/40^s$ cotton

           Weft count = 100 Den polyester

        (ii) The length of warp on weaver's beam of a loom is 600 metres. Calculate the length of fabric produced if warp crimp is 5%.   **2**

   (c) Explain standard method to determine tensile strength of a fabric.   **6**

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

   (a) Elaborate various causes of unevenness of yarn. Also explain effect of unevenness on yarn and fabric properties.

   (b) Calculate the bending modulus of a cotton denim fabric having following particulars :

      Fabric overhanging length = 5.2 cm

      Fabric weight = 84 mg/cm^2

      Fabric thickness = 0.045 cm.

   (c) Elaborate the procedure to determine tearing strength of a fabric by Elmendorf tear strength tester.

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