GUJARAT TECHNOLOGICAL UNIVERSITY

| BE - SEMESTER-VII EXAMINATION – SUMMER 2016 | | | |
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| Subject Code:172905 Date:18/05/2 | | | 6 |
| Subject Name:Fibre Science & Elements of Textile StructureTotal Marks: 70Time:02:30 PM to 05:00 PMTotal Marks: 70Instructions:1. Attempt all questions.1. Attempt all questions.2. Make suitable assumptions wherever necessary.3. Figures to the right indicate full marks. | | | |
| Q.1 | (a) (b) | Define: Moisture Regain. Discuss the regain-humidity relations of Textiles. Derive all the necessary equations to calculate Fabric Porosity. | 07 07 |
| Q.2 | (a) (b) | Derive Contraction Factor, $Cy = \frac{1}{2} (1 + \sec \alpha)$. Write a brief note on Hexagonal Close Packing. OR | 07 07 |
| | (b) | Discuss in detail the fundamental structural features of yarn. | 07 |
| Q.3 | (a) (b) | Discuss in detail the experimental work of Morton & his associates. Define: a.Twist Multiplier b. Migration. OR | 10 04 |
| Q.3 | (a) (b) | Describe Coil Winding method (Hemilton) for measuring yarn dimensions. In a multifilament yarn number of filaments is 40, find Schwarz's constant & the corrected surface twist angle, for: $Vy = 1.54 \text{ cm}^3/\text{gm}$ T = 36. | 08 06 |
| Q.4 | (a) (b) | Discuss the practical effects influenced by rate of moisture absorption. Discuss the Electronic microscopy techniques used for investigating Fibre Structure. OR | 07 07 |
| Q.4 | (a) | Discuss the order and disorder in the structure of fibre. | 07 |
| Ľ | (b) | Write a brief note on "Theories of Mechanical properties of textile". | 07 |
| Q.5 | (a) | Derive the equations of Pierce's geometry of plain woven fabric for the general case where "neither of the yarn is straight nor it is jammed". | 10 |
| | (b) | Derive the value and equation of SDF in worsted system. | 04 |
| Q.5 | (a) | OR Discuss the Walen's method of crimp measurement using load elongation curve. | 07 |
| | (b) | Derive following equation for fabric weight: $W= 0.686 [n_1/N_1(1+c_1) + n_2/N_2(1+c_2)]$ | 07 |
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