

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VII Examination-Nov/Dec.-2011

Subject code: 172905

Date: 26/11/2011

Subject Name: Fibre Science & Elements of Textile Structure

Time: 10.30 am-01.00 pm

Total marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain crimp interchange phenomenon. Also discuss effect of finishing processes on crimp. **07**
(b) Define following : i. Differential heat of sorption **07**
ii. Integral heat of sorption.

- Q.2** (a) Derive all the equations related to weight of cloth in cotton system. **07**
(b) Derive : $\tan \alpha = 0.0112 V_y^{1/2} \tau$ **07**
OR
(b) Derive : Contraction factor, $C_y = \frac{1}{2} (1 + \sec \alpha)$ **07**

- Q.3** (a) If for staple yarn T.M = 4.6 ; $V_y = 1.38$, find the value of surface twist angle α . **07**
(b) Write a brief note on “order and disorder in fibre structure”. **07**

OR

- Q.3** (a) Derive equations for fabric pore area and yarn air space in porosity. **07**
(b) Discuss in detail the fundamental structural features of yarn. **07**

- Q.4** (a) Discuss the practical effects influenced by rate of moisture absorption. **07**
(b) Discuss the reference standard for each measure of cover (k & d / p). **07**

OR

- Q.4** (a) Describe a technique for following the path of individual fibres in the yarn in order to study migration behavior. **07**
(b) Discuss, “Theories of mechanical properties of textile”. **07**

- Q.5** (a) Derive the general equation of Pierce geometry for plain woven fabric “when neither yarn is straight nor it is jammed”. **10**
(b) Briefly explain nuclear magnetic resonance technique for investigating fibre structure. **04**

OR

- Q.5** (a) Write short note on Analysis by Correlogram. **07**
(b) Derive the equation for system diameter factor (Sdf) along with its value in cotton system. **07**
