

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – WINTER • 2014****Subject Code: 172905****Date: 27-11-2014****Subject Name: Fibre Science and 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) Write a brief note on Heats of sorption in fibers. **07**
(b) Define: porosity and permeability. Derive an equation to calculate Fabric pore area in total porosity of the fabric. **07**
- Q.2** (a) Derive the equations for Pierce's geometry of plain woven fabric where "weft yarn is straight and warp yarn is jammed". **07**
(b) Discuss in detail about fundamental structural features of yarn. **07**
- OR**
- (b) Discuss in detail the significance of twist in yarns. **07**
- Q.3** (a) Describe Coil winding method for measuring yarn dimensions. **07**
(b) What are the parameters to characterize the migration? **07**
- OR**
- Q.3** (a) Discuss in detail the experimental work of Morton and his associates. **08**
(b) Write a short note on Differential Migration. **06**
- Q.4** (a) Discuss how infrared radiations can be used for investigating Fibre Structure. **07**
(b) Write a brief note on "Order and Disorder in Fibre Structure" **07**
- OR**
- Q.4** (a) Discuss the technical significance of swelling in fibres and also discuss how its measurement is done. **07**
(b) Discuss the theories on mechanical properties in manmade fibres. **07**
- Q.5** (a) Derive the relationship between two measures of cover k and d/p . **08**
(b) What is difference between crimp and Take-up.? Explain crimp-interchange phenomena. **06**
- OR**
- Q.5** (a) Derive the equations for weight factor by Pierce and Dickson. **08**
(b) Which fabric properties are affected by fabric density and specific volume? Explain in detail how fabric density and specific volume can be calculated. **06**
