

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI • EXAMINATION – WINTER • 2014****Subject Code: 162903****Date: 01-12-2014****Subject Name: Physical Testing****Time: 02:30 pm - 05:00 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 only the principle of transducer based strain gauge instrument for strength test. **05**
- (b) Explain in detail comb sorter technique for fiber length measurement. How effective length is determined? **09**
- Q.2** (a) What is fibrograph and how it is analysed? What do following terms mean? **07**
(i) Span Length (ii) UR% (iii) UI% (iv) Floating fiber %
- (b) Establish relationship between fiber fineness and maturity. Discuss the principle of fineness measurement by air flow method. **07**
- OR**
- (b) Explain the principle of fiber fineness measurement by Vibroscope. Modify the equation incorporating young's modulus. **07**
- Q.3** (a) Derive mathematically the concept of twist factor for direct system. Explain twist to break method for twist measurement. **07**
- (b) With sketch explain Beesley's instrument for count measurement from fabric sample. **07**
- OR**
- Q.3** (a) With neat sketch explain fabric stiffness measurement by cantilever principle. How bending length, flexural rigidity and bending modulus are derived? **07**
- (b) Write a short note on crease recovery test. **07**
- Q.4** (a) Discuss mathematically the effect of following on tensile strength test: **07**
(i) Test specimen length (ii) rate of loading & time to break
- (b) Write briefly on any one fiber strength tester based on balance principle. **07**
- OR**
- Q.4** (a) Write in short on following terms: **06**
(i) Short, medium and long term irregularities
(ii) Index of irregularity
(iii) Limit irregularity
- (b) What is called V-L curve? Write in short on the same. **08**
- Q.5** (a) Write in detail on high speed tensile strength testing instrument. **08**
- (b) With sketch explain various ways in which samples from fabric are to be taken for testing. **06**
- OR**
- Q.5** (a) What is meant by addition of irregularity and effect of doubling? Calculate drawn sliver CV% on a draw frame from following data. Undrawn Sliver CV%: 2.1, Draw Frame CV% : 3.85 **06**
- (b) Write features of any one modern electronic evenness measurement instrument. **08**
