

# 312318

**12526**

**3 Hours / 70 Marks**

Seat No. 

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- 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) List down various types of samples. Explain Length biased sample.
- b) Calculate standard moisture regain of 67/33 polyester cotton blended yarn. (Standard moisture regain of polyester – 0.4% and standard moisture regain of cotton – 8.5%)
- c) Elaborate concept of 2.5% span length of a fiber.
- d) Define uniformity ratio. State its significance.
- e) Draw diagrams of mature, half-mature and immature cotton fibers.

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- f) Give expression of maturity ratio.
- g) Give classification of Indian cotton using 2.5% span length parameter.

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

- a) Explain in detail how solubility test method can be used for identification of fibers.
- b) Elaborate various factors which affect moisture region of textile fibers.
- c) Explain importance of measurement of fiber fineness. A bunch of polyester staple fibers showing a mean length of 38.5 mm weighs 1.68 mg. If the fiber bunch contains 262 fibers, calculate the denier of the polyester fiber.
- d) Describe the procedure of measurement of fiber maturity by caustic soda method.

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

- a) Explain squaring and cut squaring method used for preparation of fiber sample from silver and roving.
- b) Explain effect of humidity on fiber properties and textile processing.
- c) Explain the method used for measurement of fiber fineness using microscope.
- d) Explain following fiber strength terminologies –
  - i) Breaking load
  - ii) Stress
  - iii) Mass stress
  - iv) Tenacity
  - v) Strain
  - vi) Breaking extension.

4. Attempt any THREE of the following : 12
- a) Elaborate air flow principle used for determination of fiber fineness.
  - b) Compare load elongation curve of a fiber with stress-strain curve.
  - c) Elaborate method for determination of neps using Templet method.
  - d) Explain the term 'trash'. Classify trash into different categories. State importance of determination of trash % of cotton.
  - e) Explain method of determination of trash % by Shirley Analyser.
5. Attempt any TWO of the following : 12
- a) With the help of schematic diagram, explain zoning technique used for selection of cotton sample from bale.
  - b) List down various methods used for measuring relative humidity. Explain any one method in detail.
  - c) Explain the importance of measurement of fiber length. Elaborate Gravimetric method used for measurement of fiber length.
6. Attempt any TWO of the following : 12
- a) Draw fiber length distribution diagram obtained by comb sorter experiment with the help of this diagram explain how various fiber length characteristic can be determined.
  - b) Elaborate importance of measurement of maturity of textile fiber. Describe method of determination of fiber maturity by differential dyeing method.
  - c) Elaborate importance of measurement of fiber strength. Explain measurement of single fiber strength by Instron.
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