17346

21819

3 Hours / 100 Marks Seat No. | | | | | | | | |

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 TEN of the following: **20**

a) Define metric count and give an expression of the same.

b) A cone of 30^s worsted yarn weight 1 kg, find out the length of yarn it contains.

c) Find out the diameter of 36^s cotton yarn.

d) Draw diagrams of 'S' twisted and 'Z' twisted yarn.

e) Compare the level of twist in following yarns:

(i) 16^s cotton, 20 tpi

(ii) 25^s cotton, 24 tpi

f) Explain the term CV%.

Marks

g) What is 'Index of irregularity'?

h) List down various methods of measurement of unevenness.

i) Define yarn hairiness.

j) Explain the term 'Tenacity' and give its significance

k) Define work factor.

l) What is breaking length?

m) Explain the concept of 'work of rupture'.

n) Convert 150 Denier into equivalent cotton count.

o) What is U%? What is it's significance?

2. Attempt any <u>FOUR</u> of the following: **16**

a) 100 yards of cotton yarn weight 2 gm, calculate its cotton count, equivalent tex and denier.

b) Explain the concept of twist multiplier and state its importance.

c) Write a note on classification of variation in yarn evenness and explain each type.

d) Explain various causes of yarn hairiness.

e) Draw stress strain curve and explain the terms:

(i) Young's modulus

(ii) Work of rupture

(iii) Work factor

f) List down the factors affecting tensile strength properties of textile materials.

Marks

3. Attempt any FOUR of the following: **16**

a) Derive an expression for relation between:

(i) Denier and English count

(ii) Worsted count and tax

b) Explain the relation between twist and strength of yarn with the help of a graph.

c) State various causes of unevenness of yarn.

d) Explain the method of cutting and weighing for measurement of yarn unevenness.

e) Explain the measurement of yarn hairiness by microscopic method.

f) Explain the principles of constant rate of loading (CRL) and constant rate of extension (CRE).

4. Attempt any TWO of the following: **16**

a) Derive an expression for relation between yarn count and yarn diameter in inches.

b) Explain in detail measurement of yarn unevenness by electronic capacitance tester.

c) Describe the working of single thread strength tester with the help of a neat diagram.

5. Attempt any TWO of the following: **16**

a) Describe in detail measurement of yarn count of yarn removed from fabric.

b) (i) What are the effects of yarn irregularity on fabric properties?

(ii) Explain the measurement of yarn unevenness by visual examination.

c) Describe the working of lea strength tester with the help of a neat diagram.

Marks

6. Attempt any TWO of the following: **16**

a) Describe the method of measurement of twist in a single yarn by twist contraction method.

b) (i) Describe the effect of twist on fabric properties.

(ii) Explain measurement of twist in double yarn.

c) (i) Describe the measurement of yarn hairiness by photoelectric method.

(ii) Draw a neat sketch of Instron tester used for fibre strength.