Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH(APM)/SEM-4/APM-402/2011

2011

FABRIC STRUCTURE AND TEXTILE TESTING

Time Allotted : 3 Hours Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

i) The metric equivalent of 50 tex yarn is

a) 40 Nm b) 20 Nm

c) 25 Nm d) 50 Nm.

ii) The length of 1 hank in dry linen system is

a) 300 yards b) 840 yards

c) 560 yards d) 1000 yards.

iii) The conversion factor from denier to tex count is

a) 0.111 b) 0.211

c) 9 d) 8.

iv) One repeat of 2/2, 4 warp rib having weft yarn equals to

a) 7 b) 2

c) 16 d) 8.

v) Lifting plan is the combination of

a) ends and picks

b) ends and healds

c) picks and healds.

vi) Linear density indicating

a) the length per unit mass

b) the mass per unit length.

vii) The recommended standard time to break the yarn in the tensile tester is

a) 15 sec

b) 30 sec

c) 20 sec.

viii) In CRT condition the

a) upper jaw is fixed and lower jaw is moving

b) both upper jaw and lower jaw are moving

c) upper jaw is moving and lower jaw is fixed.

ix) To produce any design on a weft knitting machine, use of which type of cam is compulsory ?

a) Knit cam b) Tuck cam

c) Miss cam d) none of these.

x) The two sides of which weft knitted fabric are not identical ?

a) Single jersey b) Rib

c) Interlock d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Define denier and tex. Why are they regarded as direct system ? 3 + 2

3. a) Explain twist on twist and corkscrew yarn ? 2

   b) Calculate the equivalent count of the two ply yarn made of two 60^s single yarn assuming that there is a contraction of 8%. 3

4. Draw the design, drafting and lifting plan of 3/3 weft rib for 2 × 5 repeat.

5. What is pilling ? Explain the mechanism of pill formation on the fabric surface. 1 + 4

6. Define drape coefficient, bending length.

7. Draw a 4-track single jersey design and show its cam set-out and needle set-out.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

8. a) Define twist. 2

b) Derive the relationship between yarn count and yarn twist. 4

c) Mention the effect of twist on fabric property. 6

d) What are the methods of measuring twist ? 3

9. a) What do you understand by the abbreviation CSP ? What are the other names of CSP ?

b) A lea of yarn gave a breaking strength of 32 Kg on a lea tester. The mass of the broken lea was 2.16 g. Calculate the CSP of the yarn. 3 + 2 + 4

c) Define RKM.

d) A 20^s cotton yarn recorded an average breaking load of 435g. Calculate the RKM of the yarn. 2 + 4

10. a) Define crimp, take up precentage and cover factor. 6

    b) What is degree of flattening of fabric ? 2

    c) What are the parameters related to the dimensional properties of fabric ? 5

    d) What is area density ? 2

11. a) What are the parameters related with the comfort property of fabric ? 4

    b) What is a breathable fabric ? 2

    c) What are the factors influencing the abrasion resistance of fabric ? 4

    d) Define wear and serviceability. 5

12. Draw the repeat drafting and lifting plan of the following design (any *three*) : 3 × 5 = 15

    a) 4/2 pointed twill 3R-3L vertical break for 2 × 2 repeat

    b) 2/2 8 ends-8 picks diamond weave

    c) crepe weave for staircase design with 8 harness and counter 5

    d) 6 harness 10 ends-10 picks honeycomb weave

    e) full repeat of 4/4 warp rib for 4 ends then move 2 picks up for each successive group.

13. a) Explain how different types of stitches are produced on a weft knitting machine ?

b) Draw a 6-feeder design of interlock base and explain needle functioning in different courses.

c) 4-track circular weft knitting machines are more versatile than a 2-track one in terms of producing designed fabrics. Justify. 5 + 5 + 5