CS/B.TECH(TT)/SEM-6/TT-602/2012

2012

FABRIC FORMATION – IV

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 type of selvedge normally used in water-jet loom is

a) Tuck-in b) Leno

c) Fused d) Knitted.

ii) Bi-phase picking system exists on

a) Projectile loom b) Rapier loom

c) Jet loom d) Multiphase loom.

iii) Profiled reed is used on

a) Projectile loom b) Rapier loom

c) Air Jet loom d) Multiphase loom.

iv) One of the selvedges of the fabric is of conventional type on

a) Projectile loom

b) Rapier (Dewas system) loom

c) Rapier (Gabler system) loom

d) Multiphase loom.

v) Projectile looms are widely accepted in the textile industry mainly because of

a) Higher speed

b) Greater flexibility in making fabrics

c) Lower cost

d) Wider width.

vi) The type of beat-up in Sulzer projectile loom is

a) Crank and crank arm b) Matched cam

c) 4-bar link d) 6-bar link.

vii) Positive picking is used on

a) Projectile loom b) Shuttle loom

c) Multiphase loom d) Jet loom.

viii) Spun lace product is

a) Fabric interliner b) Geotextile

c) Tea bag d) Automotive interior.

ix) Length of fibre commonly used for dry laid web aerodynamic method is

a) 40 - 120 mm b) > 120 mm

c) < 10 mm d) 10 - 35 mm.

x) Ultrasonic Bonding proces is a

a) Mechanical bonding method

b) Chemical bonding method

c) Thermal bonding method

d) Water-jet entanglement process.

GROUP – B

(Short Answer Type Questions)

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

2. Matched cam shedding has received more preference than grooved cam shedding on Sulzer Projectile looms. Justify with relevant reasons.

3. What is telescopic rapier drive and how is it advantageous

with respect to the other drives ?

4. Weft measuring device is essential on jet looms. Explain.

5. How does the fibre orientation in the web influence the stress-strain properties of non-woven ?

6. Define Non-woven and how does it differ from paper ?

2 + 3

7. a) Melt Blown is self-locked non-woven structure. Explain.

3

b) Thermoplastic fibres are suitable for spun bonded method. Explain. 2

GROUP – C

(Long Answer Type Questions)

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

8. a) What are the essential requirements for successful airjet weft insertion ? 6

b) What are the main physical differences between air-jet and water-jet ? What are the main factors limiting the wider use of water-jet looms ? 3

c) "What are the different configurations used on commercial air-jet looms ? Describe the principle of each group in brief. 6

9. a) What are the remarkable advantages of a Sulzer projectile loom with respect to a shuttle loom ? 3

b) What do you mean by air supported filling insertion ? Give neat sketches showing the weft insertion sequences in Sulzer projectile loom. 12

10. a) Systematically classify the Rapier looms with respect to techniques of insertion. 6

b) "To get a better transfer rapier displacement timing

characteristics should be elaborated." — Justify. 3

c) Show with neat sketches the principle of weft insertion in a Bi-phase rapier loom. 6

11. a) Describe in brief the process of needle punched fabric formation. 11

b) Show with a neat diagram the structure of a barbed needle. 4

12. a) ”All the polymers suitable for melt spinning can be used to make Spun-bonded web." Justify the statement by describing the process of spun-bonded web formation with neat schematic diagram. 11

b) Apart from physical properties of polymer, what are the other factors that influence the properties of spunbonded web ? 4

13. a) Discuss about the factors on which the properties of needle punched fabric depend. 6

b) What are the factors affecting punch density of needle punched fabric ? 4

c) A card with working width of 120 cm is producing a web of 30 gsm with a speed of 40 m/min, which is finally converted to a web of 100 gsm. Calculate the speed of cross lapper. (Given : laying width of cross lapper is 80 cm). 5