2012

DESIGN AND STRUCTURE OF FABRICS-I

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) Backed cloth is employed essentially for the purpose of

increasing

a) warmth-retaining qualities of a cloth

b) the decoration of the fabric

c) weight of the fabric.

ii) 80^S count reed with 2 ends in a dent produces

.... in the cloth

a) 80 ends / inch

b) 40 ends / inch

c) 60 ends / inch.

iii) Special selvedge motion is a mechanical attachment

during weaving

a) when picks are inserted in same shed

b) to secure a firmer selvedge

c) to prevent shrinkage of fabric widthwise.

iv) Amount of contraction of warp during weaving of warpribbed

fabric is dependent upon

a) count of weft

b) no. of picks per unit length

c) degree of tension upon warp

d) all of the aforesaid factors.

v) Designs which are symmetrical can be woven more

conveniently in

a) straight draft b) skip draft

c) pointed draft d) broken draft.

vi) By colouring the plain weave 1 dark and 1 light in warp

and weft, the solid vertical or horizontal hairlines

produced are equal to

a) width of one thread

b) width of two threads

c) width of three threads.

vii) The object of wadded threads is to give

a) greater prominence to the cords

b) special design effect on the face of the cloth

c) greater weight of the cloth.

viii) Jean is traditionally

a) warp faced 2/1 twill

b) weft faced 2/1 twill

c) balanced twill of simple nature.

ix) In square cloth with balanced weave of 2/2 twill the

twill line will be distinct if

a) $Z : S \times Z$

b) $Z : S \times S$

c) $Z : Z \times S$.

x) If 4- and 6-thread twills are combined on pick

alternately, then combined twill will be repeating on

a) 24 picks and 12 ends

b) 24 picks and 24 ends

c) 12 picks and 12 ends.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Explain the two main classes of jacquard lying system with schematic line diagram.

3. Calculate the weight of warp and weft in a piece of worsted from the following particulars :

Fabric length	—	63 yds.
Warp length	—	70 yds.
Width in reed	—	64 in.
Ends / inch in reed	—	50,
Picks / inch in fabric	—	48.
Counts of warp & weft	—	$2/32^S$ worsted.

4. Write the typical characteristics, specification of any two of the following cloths :

a) Voile

b) Chiffon

c) Denim

d) Calico.

5. "Relation prominence of threads diminishes in proportion to the amount of bending performed by them in cloths." —

Justify this statement with suitable diagram.

6. Distinguish between :

a) Honeycomb and Brighton

b) Satin & Sateen

c) Diamond and Diaper

d) Crêpe weave and Crêpe effect.

7. Illustrate with suitable examples the structures of Barleycorn weave and cork-screw twills.

8. Though diamond weaves can be woven on any number of threads, those on even number are more appealing than those on odd numbers. Explain with the help of suitable designs.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

9. a) Draw the design of a light Bedford cord of elementary character giving drafting and denting plan. Cord formation may be made explicit with transverse section of the appropriate ends and picks (you may avoid using wadding threads). 7

b) Why is the backed-cloth clan of fabrics recognized as a midway variant between simple & compound textures ? Explain. 2

c) Make a comparative study between warp and weft backed fabrics from technical, utilitarian and economy point of view. 6

10. What are the uses for spot design ? How are the spot effects produced in a cloth ? Explain the method for the distribution of spot figure. Fine spots are distributed upon 30 ends and 40 picks and are now required to be rearranged in 8-sateen order with the same proportion of ground space as before. What would be an approximate number of the 8-sateen distributed with plain weave ground ? $1 + 6 + 4 + 4$

11. a) Give the particulars of a typical repp. cloth and show its construction explaining warp-weft interaction with

respect to tension they are subjected to with the aid of cross-sectional or longitudinal view of threads.   8

b) Draw the design of an eight-end honeycomb and explain how ridges and recesses of its cells are formed in the fabric.   7

12. a) Illustrate with suitable simple designs, the principles of weaving Huck-a-Back and Mock-leno effects.   7

b) Make an in-depth study of the factors affecting prominence of twills and allied weaves.   8

13. Write short notes on any *two* of the following : $2 \times 7\frac{1}{2}$

a) Seer suckar and shadow stripes

b) Combined twill and herringbone

c) Hound's tooth and shepherd's check

d) Fabric assistance and crimp in fabric.

14. A stripe fabric which is woven $40\frac{1}{2}$ inches wide on a 84's stockport reed with

72 picks / inch selvedges are $\frac{1}{4}$ inch wide on each side woven with $\frac{2^S}{42}$ beached yarn 4 in a dent. The length of the piece is 30 yards and the regain of warp is 4%. The count of the weft is 50^s cotton and the warp pattern is as follows :

40^s dark brown	—	3 ends
36^s white	—	3 ends
32^S green printed	—	1 end
36^s white	—	3 ends
36^s light brown	—	5 ends
$2/50^s$ grandelle (dark yellow & white)	—	1 end
36^s light brown	—	5 ends

Calculate :

i) Total number of ends in the warp

ii) Total length of each coloured warp

iii) Total weight of each coloured yarn

iv) Total weight of yarn in the piece.   15

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