Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.TECH(TT)/SEM-1/MTT-102/2012-13

2012

KNITTING & NON-WOVEN TECHNOLOGY

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.

Answer Question number 1 and any *four* from the rest.

1. a) Mention the different stitches used in weft knitted structures. How are they formed ? 7

   b) Explain why 'More work is required to compact of lofty web'. $3\frac{1}{2}$

   c) Explain — 'Fibre orientation in a web is particularly important in relation to fabric tensile properties'. $3\frac{1}{2}$

2. a) Explain the techniques of forming knit, tuck and miss loops on weft knitted structure. 7

   b) 4-track circular weft knitting machines are more versatile than a 2-track one in terms of producing designed fabric. Justify. 3

   c) Show a design of interlock base and explain needle functioning in all courses. 4

3. a) Quality of weft knitted fabrics depends very much on the quality and maintenance of different knitting elements of the machine. Justify this mentioning some important fabric defects. 7

   b) What would be the production in kg/hr of a single jersey weft knitting machine of 30 inch diameter, 24 Gauge, 96 feeders and running at 30 rpm, producing basic single jersey cotton fabric of 2·5 mm stitch length using 24^s yarn. Assume any value of efficiency of your reasonable choice. 7

4. a) Spun yarns used for knitting demand more stringent norms of yarn properties than the yarns for weaving. Explain this considering the relevant yarn properties. 7

   b) Mention 5 frequently occurred fabric defects which appear on a weft knitted fabric due to yarn faults. Discuss on how they appear and their remedial measures. 7

5. a) Explain the vertical and horizontal structure of needle punched fabric. 4 + 2

   b) Derive the expression of punch density (punch / cm^2) for a needle loom with following specification : 4

   n = Total number of needles per 1 m working width of the loom.

   f = strokes / sec.

   P = number of passage through needle loom.

   V = velocity of web in m/min

   N_p = Punch density in punch/cm^2 .

   c) Close Barb is associated with high production rate of needle loom. Justify. 4

6. a) Elaborate the following specification of a needle : 4

$15 \times 18 \times 30 \times 3\frac{1}{2}$ RB NK.

b) What are the factors affecting the fabric structure of needle punched fabric. 4

c) Describe in detail the size and shape of MB and RB needle. 2 + 2

d) What is depth of needle penetration ? 2

7. a) What are the important process variables of meltblown structure ? 6

b) Name the factors which control the diameter of fibre in meltblown Fabric. 4

c) Describe the properties of meltblown web. 4