Roll No. .....

34061

Printed Pages : 7

BT-4/M–18

FABRIC MANUFACTURE–II

Paper–TT-204

Time allowed : 3 hours] *[Maximum marks : 100*

Note : **Section–A** *contains one compulsory question. Attempt any one question from each of the remaining four sections* **(B,C,D** *and* **E)**. *All questions carry equal marks.*

Section–A

1. (a) Weft stop motion of a loom falls under
   - (A) Secondary motion
   - (B) Auxiliary motion
   - (C) Primary motion
   - (D) None of the above

   (b) Drop box motion in a shuttle loom is used to achieve
   - (A) Automatic change of pirn
   - (B) Automatic change of shuttle
   - (C) Weft mixing and weft patterning
   - (D) Warp patterning.

   (c) Pirn change mechanism in a shuttle loom is used to achieve
   - (A) Reduction in down time of the loom
   - (B) Improvement in loom efficiency
   - (C) Reduction in the work load of the loom operator
   - (D) All of the above

(d) The following is a component used in warp stop motion,
- (A) Weft fork
- (B) Reed
- (C) Heald wire
- (D) Drop pin

(e) In beat-up mechanism of shuttle looms the sley is driven by
- (A) Crank on the crank shaft
- (B) Cam on the crank shaft
- (C) Cam on the bottom shaft
- (D) None of the above

(f) Cam shedding is generally restricted to
- (A) Up to around 8 to 10 picks per weave repeat
- (B) Up to around 4 to 5 picks per weave repeat
- (C) Up to around 18 to 20 picks per weave repeat
- (D) No much restriction in picks per weave repeat

(g) In lever type dobby shedding mechanism
- (A) True dwell of shed is possible
- (B) True dwell of the shed is not possible
- (C) Heald frames are not used
- (D) None of the above

(h) In a shuttle loom the power of picking is found to be

(A) Independent of the speed of the loom

(B) Proportional to square of the loom speed

(C) Proportional to cube of the loom speed

(D) Proportional to the loom speed

(i) The speed of shuttle in shuttle looms depends on

(A) Machine speed

(B) Angle of loom cycle the shuttle takes to traverse the shed

(C) Drawing-in width

(D) All of the above

(j) Torsion bar is a component used in

(A) Air jet weaving machines

(B) Projectile weaving machines

(C) Rapier weaving machines

(D) All of the above

(k) The Gabler principle of weft insertion used in rapier weaving machines is based on

(A) Loop transfer of weft at the shed center

(B) Tip to tip transfer of weft at the shed centre

(C) Use of only one rapier for weft insertion

(D) None of the above

(l) The mass of a projectile is usually around

(A) 20 grams

(B) 40 grams

(C) 60 grams

(D) 80 grams

(m) Circular looms run on

(A) Single phase principle

(B) Warp directional shed wave principle

(C) Weft directional shed wave principle

(D) None of the above

(n) Tapes manufactured on needle looms usually have

(A) Hair pin type selvedge on both sides

(B) Knitted selvedge on both sides

(C) Hair pin type selvedge on one side while knitted on the other side.

(D) None of the above

(o) Drum type weaving machines run on

(A) Single phase principle

(B) Warp directional shed wave principle

(C) Weft directional shed wave principle

(D) None of the above

(p) State the primary motions of a loom.

(q) What are the additional features of automatic shuttle looms as compared to non-automatic shuttle looms ?

(r) Differentiate between single lift and double lift dobby shedding mechanisms.

(s) Define the term multiphase weaving. What is meant by the term phase number ?

(t) Name the different types of nozzles used in modern air jet looms. 20×1

Section–B

2. (a) State the objective and need of warp stop motion in a loom. Name the different types of warp stop motions that are used in shuttle looms. 4

(b) With suitable diagrams discuss the construction and working of any mechanical type stop motion used in shuttle looms. 16

3. With suitable diagrams discuss the construction and working of automatic pirn change mechanism. 20

Section–C

4. (a) Explain the scope of jacquard shedding. Give its advantages and disadvantages over cam shedding. 8

(b) With suitable figures discuss the principle and working of any electronic jacquard. 12

5. (a) Draw typical nominal versus actual picker displacement curves obtained in shuttle looms and discuss the difference in the two curves along with their physical implication. 10

(b) Derive a suitable relation between the loom r.p.m.; shuttle velocity and the angle provided for shuttle passage through the shed. Hence, calculate the shuttle velocity for a loom r.p.m. of 150 and drawing-in width of 100 cms. Appropriate values of other necessary data may be assumed. 10

Section–D

6. Discuss with suitable figures the prinicple of operation of the following weft insertion systems :

(i) Rapier

(ii) Projectile. 10+10

7. (a) Discuss with suitable figures the warp and weft directional shed wave principle of operation of multiphase looms. 10

(b) Define the term circular loom. With suitable figures discuss its types and give their uses. 10

Section–E

8. Give typical values of speed, weft insertion rate, weft velocity, reed width range and production in meters per hour of modern single phase weaving machines. Give the application domain of each in brief.

9. Calculate the production of an air jet weaving machine in both mts/hr and kgs/hr having the following particulars :

   – Drawing in width = 170 cms

   – Loom speed = 900 r.p.m.

   – Ends per c.m. and picks per c.m. in fabric = 30 and 25 respectively

   – Warp and weft count = 2/40 Ne each

   – Lengthwise and widthwise cloth contraction = 6% & 4% respectively

   – Efficiency = 90% 20