THE TEXTILE ASSOCIATION (INDIA)
A.T.A. (REVISED) EXAMINATION – 2015
PART II - PAPER A 2.1

PRINCIPLES OF YARN MANUFACTURE

Date: 24.12.2015
Marks: 100
Time: 2 pm to 5 pm

Instructions:
1. Attempt SIX questions out of which Q1 is compulsory
2. Answer each next question on new page
3. Figure to the right indicate full marks
4. Illustrate your answers with sketches and flow chart wherever necessary
5. Use of non-programmable electronic pocket calculator permissible
6. Mobile and any other communication devices are not allowed in exam hall.
7. Assume suitable data wherever necessary

Q1 a. Fill in the Blanks
   i. The method of assembling two or more single yarns is called ____________.
   ii. The ratio of the delivered length to the feed length is defined as ____________.
   iii. Opening of the individual fibres is essentially the task of the ____________.
   iv. Higher the winding tension _________ the yarn tenacity and elongation.
   v. Denier is an example of ____________ Yarn numbering system.

b. State true or false:
   i. It is much more difficult to remove trash from well cleaned cotton than it is from dirty cotton
   ii. Card flat strips and grid waste should not be reused.
   iii. Staple fibres must be compressed into bales to assist in transportation and storage.
   iv. Balloon control rings help to run the machine with long spindles
   v. Fibre to fibre cohesion is the highest in comber silver

c. List and Write the correct answer:
   i. The closest setting in a card is between (Cylinder & the flat, Cylinder & licker-in, Cylinder & doffer)
   ii. High production in carding to economise the process leads to (increase, retention, reduction) in yarn quality.
   iii. The traveller should be (less, more, equally) hard as compared to the ring.
   iv. In the blow room, cotton tuft size vary from (1mg to 5mg, 5 mg to 150 mg, 50 mg to 500mg).
   v. The flats of a card rotate at a speed typically in the range of (3-20 cm/min, 8-20 m/min, 8-20 km/min)
d. Match the following

1. Lap forming unit  a. Spicing
2. Fancy yarn  b. Improves yarn quality
3. Unilap  c. Scutter
4. Open loop system  d. Combing preparation
5. Autoleveller  e. Bouclè

Q2 a. What are the functions of a blowroom? Discuss briefly the machines used in the blowroom.

b. Define the degree of cleaning and degree of opening. Discuss the objectives and stages of blending?

Q3 a. Describe the principle of operation of a carding machine with the help of a diagram.

b. What are the functions of auto leveller? Discuss the types of auto leveller and its operating principles.

Q4 a. What are the functions of a draw frame? Describe the importance of drafting arrangement in a draw frame.

b. Discuss the importance of the combing operation and its technical and economic impact on spinning process.

Q5 a. Briefly discuss the importance of a speed frame. What is roving tension and explain its significance?

b. Explain the functions of ring spinning. Discuss the advantages of ring spinning as compared to other systems of spinning.

Q6 a. Discuss the importance of the winding process. What is winding tension?

b. Discuss briefly the different varieties of fancy yarns and their method of production. What is the commercial importance of fancy yarns?

Q7 Write short notes on any 4 of the following:
(i) Bale blooming (ii) Drafting wave (iii) Yarn faults (iv) Spinning triangle (v) Lap feeding versus chut feeding

Q8 a. The fluted lap roller of a scutter of 9 inches diameter makes 10 revolutions per minute. If the lap count is 0.00136Hk, calculate the production of scutter in one shift of 8 hours at 80% efficiency.

b. Calculate the draft at drawing frame if the feeding silver is 72 grains/yd, delivered silver is 48 grains/yd and the number of doublings is 8.

c. Calculate the length of the yarn on a package of 60/2 cotton yarn with a tare weight of 4.166 lb.

d. Two yarns of 80s English count are doubled to form a twisted yarn. Express the resultant count in cotton English system as well as metric system.

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