THE TEXTILE ASSOCIATION (INDIA)
A.T.A. (REVISED) PART-II EXAMINATION – 2012
PAPER – A 2.1
PRINCIPLES OF YARN MANUFACTURE
MARKS : 100

Date: 22.12.2012

Time: 2 pm to 5 pm

Instructions:
1. Attempt six questions out of which Q.1 is compulsory
2. Answer each next main question on new page.
3. Figure to the right indicate full marks
4. Illustrate your answer 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.

Q.1. a. Fill in the Blanks:

1. Ring spinning produces yarn in a package form called ________________.
2. Electronic Yarn Clearers available in the market are principally of two types viz., _________ and _________________.
3. ________________ is the ultimate method to eliminate yarn faults due to problems of knots and piecing.
4. Denier is an example of ________________ Yarn numbering system.
5. One hank in cotton English system is equal to ______ yards.

b. State true or false

1. Normally trash is separated from the cotton by centrifugal force.
2. The main work of the card, separation to individual fibres is done between the main cylinder and the flats
3. Balloon control rings help to run the machine with long spindles
4. Antiwedge rings and elliptical travellers cannot be used in combination.
5. Spinning tensions affects the yarn strength more than its elongation.

c. Underline the correct answer

1. (Higher, lower, normal) cylinder speed improves carding action, thereby imperfections are reduced.
2. The drawframe constitutes around (5%, 10%, 15%) of the yarn production cost.
3. Fibre to fibre cohesion is (More, Less, Equal) for combed slivers
4. The traveller should be (less, more, equally) hard than the ring.
5. Normally, yarns are ply-twisted in the (opposite, same, composite) twist direction from that which is found in the singles yarn.

d. Match the following

1. Vertical opener a. Drafting arrangement
2. Kirschner beater b. Carding operation
3. Heart of drawframe c. Minor cleaning point
4. Heart of spinning d. Combing preparation
5. Unilap e. Major cleaning point

Q.2. a. What are the objectives of blowroom? Discuss the need for opening and the methods of opening.

b. Define degree of opening and degree of cleaning. Why should new tuft surfaces be created continuously in the blowroom operations?

Q.3. Write short notes on any 4 of the following:

(i) Blending (ii) Scutchers
(iv) Drafting wave (iii) Auto levelling systems
(v) Spinning triangle.

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Q. 4. a. List the tasks of a card. What are the elements of a carding machine & briefly state the function of each of them.  
   b. Depict by means of a line sketch, a trailing hook, a leading hook and a double hook fibre and mention its significance in carding & later processes in spinning.

Q. 5. a. Discuss the importance of drawframe roller settings. Explain the role of drafting and doubling on a drawframe.  
   b. What are the tasks of a comber? What are the factors that decide the noil percentage during the combing process?

Q. 6. a. What is roving tension and explain its significance? Discuss briefly the types of roving tension?  
   b. What are the advantages of ring spinning system? Explain the functions of ring spinning.

Q. 7. a. Explain the tasks of a winding process? Discuss the purpose and methods of ply twisting.  
   b. What are fancy yarns? List the 8 basic profiles of fancy yarns with a very brief description of their appearance and end use.

Q. 8. a. Given: Efficiency = 90 %, Speed of Bottom Calendar Roller (BCR) = 10 RPM, Diameter of BCR = 7 inch and Lap weight = 16 ozt/yd. Calculate the production in kg/shift of 8 hour. Production of blow room in kg/8 hr.  
   b. Calculate the grains/yard of delivered sliver if feeding sliver is 68, doubling is 6 and the draft is 7.  
   c. Calculate the TPI on simplex if the diameter of back roller is 15/16”, rpm of B.R is 10, rpm of flyer is 1000 and draft is 6.  
   d. A simplex frame working at 80% efficiency prepares a full doff in 3½ hours. The weight of roving on full bobbin is 3 lb and 4 oz. The hank of roving is 1.0. Calculate the production of a frame of two doffs in hanks and the speed of the front roller of 1½ “ diameter.

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