PRINCIPLES OF YARN MANUFACTURE

Date: 24.12.2014 Marks:100 Time: 2.00 pm to 5.00 pm

Instructions:
1. Attempt any six questions out of which Q.1 is compulsory.
2. Answer each next main question on new page.
3. Figure to the right indicates 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.

Q. 1. A. Fill in the Blanks

1. Opening of the individual fibres is essentially the task of the __________.
2. The carding zone is the area between the main cylinder and the __________.
3. Roving breaks in speed frame should not be more than ________ per 100 spindle hours.
4. Yarn cleaners are principally of two types namely ________ and ________.
5. The basic function of doffer is to strip the fibres from the __________.

B. Say true or false

1. The degree of cleaning cannot be better than the degree of opening.
2. The grids do not have any influence on the cleaning effect.
3. Friction does not play a role the elimination of dust bound to the fibres.
4. A high degree of opening in blow room facilitates cleaning during carding.
5. A great majority of operating devices in blow room machines function as opening devices.

C. Underline the correct answer

1. The process of allowing the cotton to relax and absorb moisture by removing bale ties is referred to as (bale relaxing, bale blooming, bale blossoming).
2. Spiked lattices are usually located in (hoppers, beaters, peelers)
3. When processing long staple cotton, (saw tooth rollers, pinned rollers, drum rollers) are more suitable.
4. High production in carding to economise the process leads to (increase, retention, reduction) in yarn quality.
5. The peripheral speed of the rollers in a draw frame in the through flow direction (increases, decreases, remains consistent) from roller pair to roller pair.

D. Match the following

1. Defective bearing & gears a. Improves yarn quality
2. Delivered length to feed length ratio b. Doubling
3. Chenille c. Affects U%
4. Splicing d. Fancy yarn
5. Plying e. Draft

Q.2. Discuss the sequence of operations in short staple spinning process with the help of a flow chart and diagrams wherever necessary.

Q.3. Write short notes on any 4 of the following: (i) Yarn numbering system (ii) Fibre Blending (16)
Q. 4. a. What are the broad five categories of blow room machines? Briefly discuss their functions. (8)
   b. What is a bale layout? Discuss its significance. (8)

Q. 5. a. Explain the importance of card in the spinning process. Briefly discuss the functions of the various elements of the card with the help of a section diagram. (8)
   b. What are the two rules of carding? Discuss their importance. (8)

Q. 6. a. "Drafting arrangement is the heart of the draw frame" – discuss this statement with suitable illustration. (8)
   b. Discuss the importance of combing operation and the sequence of operations in combing. (8)

Q. 7. a. Discuss the inevitability of a speed frame. Briefly explain its functions. (8)
   b. What are the factors that affect roving strength? What is roving tension? (8)

Q. 8. a. Calculate the length of the yarn on a package of 80/2 cotton yarn with a tare weight of 4.166 lb. (4)
   b. Calculate the production of yarn in oz/spindle/shift on a ring frame if the Spindle speed is 16000"/min, twist multiplier is 3.8, yarn count is 30/1 and Efficiency of the machine is 93%. (4)
   c. Calculate the grains/yd of the delivered sliver if feeding sliver is 72, doubling is 8 and the draft is 6. (4)
   d. Calculate the TPI (twists per inch) on simplex, if the diameter of back roller is 15/16 inches and rpm of flyer is 1000 and draft is 6. (4)

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