

07-05-2016 @LHC 121

MAJOR TEST: TXL 131 (FABRIC MANUFACTURE I)
Maximum Marks: 40

Please do not write your name on answer script. Write your entry number only.
Answers must be supported with relevant figures and mathematics expressions.

Entry no: 2013TT10910

1. a) Draw a neat diagram of step precision winder and mark important components.
b) Explain its working principle with special reference to control of patterning.
[2+3]
2. Name the important parameters which should be considered before the selection of sizing materials and determining the optimum size add on. Explain the roles of each parameter briefly.
[5]
3. What is skip draft? When is it used? What is its advantage? Show a skip draft by choosing suitable design, drafting and lifting plan.
[1+1+1+2]
4. a) What is bumping?
b) Name the factors which influence bumping? Explain how these factors influence bumping?
c) How can you prevent bumping?
[2+2+1]
5. A sizing machine is running with the following parameters:
Machine speed: 100 m/min; Machine width: 2 m; Percent occupation: 40; Yarn count: 20 Ne Fibre: 100% cotton; Add on: 10%; Size paste concentration: 20%
Moisture content in feed yarn: 10%
Calculate the following
a) Yarn diameter in mm
b) Total number of yarns in the warp sheet
c) Oven dry mass of yarn passing through the machine in kg/min
d) Total wet pick up in kg/min
e) Drying load in kg/min.
[5]
6. The drum diameter of a sectional warping machine is 1 m. The maximum permissible thickness of warp layer is 5 cm. The number of section is 50 and number of yarns in each section is 100. If the yarn (100% cotton) count is 20 Ne and inclination of the drum at the sides is 10° , then calculate the following:
a) Length of the warp sheet in m
b) Total mass of yarn in the drum
c) lateral traverse per drum revolution in cm if the lateral traverse is given to the yarn section after every revolution of the drum

7. A shuttle loom is operating with the following parameters.
Loom speed: 240 picks/min; Velocity of shuttle when it leaves the picker = 20 m/s
Degree of crank shaft rotation available for picking mechanism = 30° ; Shuttle mass = 0.6 kg

Calculate the following considering straight line nominal displacement

- Alacrity of picking system
- Rigidity of picking system
- Time for maximum acceleration of shuttle in s
- The maximum acceleration of shuttle
- The effective stroke of picker

[5]

8. The gearing diagram of 7-wheel take up motion is given below. The produced fabric is showing a periodic variation in pick spacing with wavelength of 0.34 inch and width of 0.028 inch. Identify the source of the fault. What is the problem with that particular gear? Justify your answer with relevant calculations. [5]

