Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(NEW) • EXAMINATION – WINTER 2016

Subject Code:2172903 **Date:21/11/2016**

Subject Name:Production Planning & Maintenance

Time:10.30 AM to 1.00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Calculate the production of Sizing machine in kgs/shift of 8 hours using following details : **07**

- Machine speed : 85 metres/min
- Yarn count : 36^s
- Efficiency % : 54
- Warp sheet length per sized beam : 900 metres
- Ends/beam : 3400

Also, calculate the number of such machines to be required to supply sized beams per day to a weaving unit having 220 rapier looms, weaving 56 picks/inch quality of fabric and running at 375 rpm with 88% efficiency.

(b) Calculate allocation of looms for a weaving unit having plain power looms running at 145 rpm. The frequency of warp breaks, weft breaks, shuttle change and weft change observed for 1,00,000 picks are found to be 22,12,70, and 79 respectively. **07**

Q.2 **(a)** Prepare Warp & Weft Production Schedules to produce 5.6 lac metres of grey fabric per month having following details : **07**

- Reed/Pick – 86/56
- Warp/Weft – $30^s/36^s$
- Fabric Width – 44 inches

(b) Calculate the number of automatic shuttle looms running at 210 rpm with 85 % efficiency to be required to produce 3.00 lac meters of following variety of fabric per month : **07**

- Reed/Pick – 64/42
- Warp/Weft – $40^s/32^s$
- Fabric Width – 48 inches

Also, calculate the weight of warp and weft to be required to produce the said quantity of fabric.

OR

(b) State the importance of maintenance in warping department. Explain the daily, weekly, monthly and quarterly/yearly check points for warping machines in detail. **07**

Q.3 **(a)** What is break-down maintenance? State different types of maintenance. Explain the daily, weekly, monthly and quarterly/yearly check points for winding machines in detail. **07**

(b) A Weaving Unit is having 350 Plain Power looms each of 52 inches of width, producing a fabric quality of 68 picks/inch and running at 155 rpm with 72 % efficiency. Calculate number of Pirn Winding machines each of 10 spindles and running at 200 metres/min surface speed with 90 % efficiency to be required to supply pirns having 36^s yarn count per day to meet with the requirements of the said weaving unit. **07**

OR

Q.3 (a) Calculate the number of Texturing machines each having 160 spindles and running at 1400 mts/min with 96 % efficiency to be required to supply 72 Denier warp & 72 Denier weft textured yarn per day to meet with the requirements of the Weaving Unit having 320 Water-jet Weaving machines running at 880 rpm with 94 % efficiency to produce shirting fabric having Reed/Pick of 76/72 and 42 inches of width. **07**

(b) A ready-made garment industry is set to use 95000 pieces each of 4.2 metres length of shirting fabric having Reed/Pick of 80/52 and Warp/Weft yarn counts: $30^s/36^s$ per month. Calculate the number of sizing machines running at 65 meters/min with 58 % efficiency having 3000 ends in a beam and rapier weaving machines running at 270 rpm at 85 % efficiency to be required to supply the said number of pieces per month. **07**

Q.4 (a) Prepare Spin plan to produce combed yarn of 60s Ne warp and 64sNe weft if the hank of lap is 0.0018 and T.M is 3.6 for warp and 3.4 for weft. **07**

(b) Prepare production schedule to produce 1000 kgs of combed of 80sNe using modern spinning line. **07**

Hence calculate number of combers required if Feed/nip is 8mm , Nips/min is 350 , hank of lap is 0.016 , Noil is 10% and efficiency is 92% .

OR

Q.4 (a) Prepare spin plan to produce carded warp yarn of 24sNe and weft of 24s , if hank of lap is 0.012 hank and T.M is 4.2 for warp and 4.0 for weft. **07**

(b) Calculate number of Ring frame spindles required for producing 1000 kgs/shift for 24s Ne if spindle RPM is 14000 , Efficiency is 90% ,T.M is 4.0. **07**

Will it be advisable to increase the speed by 10% at the cost of decreasing efficiency by 2 % .

Q.5 (a) Calculate production of Speed frame in terms of kgs/spindle/shift from following data : **07**

Hank of sliver - 0.14
Draft - 12
Spindle RPM - 1200
T.M - 1.0
Efficiency - 85%
Number of spindles = 160

Hence calculate number of machines required to produce 800 kgs of roving /shift.

(b) Discuss in detail various aspects related to maintenance of Ring frame. **07**

OR

Q.5 **(a)** Calculate number of Draw frame required to produce 2000kgs of Drawn sliver//shift from following data : **07**

Hank of sliver fed - 0.14
Draft - 6
Doubling - 8
Efficiency - 88%
Delivery speed - 800mts/min
No of deliveries/machine - 2
If the capacity of can is 100 kgs calculate time in which can is filled.

(b) Discuss daily weekly and monthly checks for maintenance of Carding machine. **07**

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