Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2172903 **Date: 02/05/2017**

Subject Name: Production Planning & Maintenance

Time: 02.30 PM to 05.00 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)** If the Warping machine speed is 500 mts/min, using 32^s yarn count and efficiency % is 58, calculate the number of machines required to supply beams per month to the Sizing unit having 7 sizing machines. Assume set length of 25000 metres and 480 ends/beam on warping machine. Use following details for sizing machines : **07**

- Ends/beam – 2800
- Length of warp sheet per beam – 220 mts
- Speed – 65 mts/min
- Efficiency % - 52

(b) A combing department is working with following parameters : **07**

Feed / nip - 7 mm

Nips/min - 300

Hank of lap fed - 0.012

If the number of combers are 8, the average efficiency is 90% and noil removed is 10% , calculate production in terms of kgs/shift/m/c. and of department.

Q.2 **(a)** Following varieties of fabrics are to be produced in a weaving unit during the year : **07**

- 2/2, 1/2 twill fabric – 28.00 lac mts, Reed/pick – 64/44
- 1/1, 2/4 twill fabric – 2.3 million metres, Reed/pick – 96/56
- Fabric Width – 48 inches
- Loom Speed – 155 rpm
- Efficiency % - 76

Calculate the number of Shuttle Looms to be required to produce the said quantity of fabric.

(b) Prepare Warp & Weft Production Schedules to produce 78,000 kgs of grey fabric per day having following details : **07**

- Reed/Pick – 92/52
- Warp/Weft – $30^s/36^s$
- Fabric Width – 42 inches
- Weave – 2/2 twill

OR

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

Q.3 **(a)** State the importance of maintenance in weaving department. Explain the daily, weekly, monthly and quarterly/yearly check points for automatic weaving machines in detail. **07**

(b) Calculate allocation of looms for a weaving unit having plain power looms running at 135 rpm. The frequency of warp breaks, weft breaks, shuttle change and weft change observed for 95,000 picks are found to be 21, 11, 66, and 84 respectively. **07**

OR

Q.3 **(a)** Calculate the number of Projectile Weaving machines to be installed to match with the production capacity of a Yarn Preparatory Unit having 6 Texturing machines each having 120 spindles and running at 1100 mts/min with 94 % efficiency. These Projectile Weaving machines are running at 430 rpm with 95 % efficiency and producing industrial fabric having Reed/Pick of 30/20, 62 inches width and using 240 denier of yarn as warp & weft. **07**

(b) 88000 pieces each of 4.5 mts length of 100 % cotton shirting fabric having Reed/Pick of 80/52 and Warp/Weft yarn counts:$30^s/36^s$ are required to be purchased by a ready-made garment industry per month. Calculate the number of sizing machines running at 85 meters/min with 68 % efficiency having 3200 ends in a beam and rapier weaving machines running at 320 rpm at 89 % efficiency to be required to supply the said number of pieces per month. **07**

Q.4 **(a)** Prepare spin plan to produce Combed warp yarn of 70s Ne with T.M of 3.7 and 74s Ne weft with T.M 3.5.Hank of lap is 0.0019 **07**

(b) Calculate number of carding machines required for producing 800kgs of carded sliver /shift from following parameters : **07**

- Doffer Rpm - 50
- Doffer Diameter - 27 inch
- Hank of sliver delivered - 0.15
- Efficiency - 88%

If the can accommodates 3000 mts of sliver calculate the weight of sliver in can.

OR

Q.4 **(a)** Prepare Spin plan to produce Rotor spun yarn of 12 Ne warp and 14 Ne weft with T.M of 5.5 for warp and 5.3 for weft. The hank of lap is 0.0012. **07**

(b) Calculate the time required by draw frame to produce 1500 kgs of sliver from following data : **07**

- Speed - 800 mts/min
- Efficiency - 92%
- Hank of sliver delivered - 0.18
- Number of deliveries - 1

Also calculate the time to fill the can which can accommodate 80 kg of Sliver.

Q.5 **(a)** Prepare production schedule to prepare 1200 kgs of carded Yarn of 36s Ne on modern spinning line. **07**

Hence calculate number of Ring frames required from following data :

- Spindle rpm - 14,500
- T.M - 4.0
- Efficiency - 88%
- Number of spindles on machine - 864

(b) Discuss in detail maintenance of Blow room. **07**

OR

Q.5 **(a)** Prepare production schedule to prepare 1400 kgs /shift of Rotor Yarn of 10s Ne. **07**

Hence calculate number of Rotor spindles required from following data :

- Spindle rpm - 100000
- T.M - 5.6
- Efficiency - 92%

(b) Discuss various aspects of maintenance of Comber in detail. **07**

****