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

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 172903 **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)** 65,000 metres of following quality of grey fabric are to be produced : **07**

- Reed/Pick – 92/52
- Warp/Weft – 40s/32s
- Fabric Width – 48 inches

Prepare Warp & Weft Production Schedules.

(b) Following variety of fabric is to be woven on 330 Water-jet looms to achieve 92 % efficiency : **07**

- Reed/Pick – 76/62
- Warp/Weft – 74 D / 74 D
- Fabric Width – 52 inches
- Weave – Plain
- Loom Speed – 780 rpm

Calculate number of Texturising machines having120 spindles with delivery speed of 1100 mts/min and efficiency % of 94 to be required to supply warp & weft yarn per day to the said Weaving unit.

Q.2 **(a)** A weaving unit is set to produce following varieties of fabrics during the year : **07**

- Denim fabric with 20 picks/inch – 2.5 lac pieces each of 3.5 mts length
- 4/2 twill fabric with 80 picks/inch – 1.2 million metres
- Fabric Width – 48 inches

Calculate the number of Shuttle Looms running at 145 rpm with 77 % efficiency to be required to produce the said quantity of fabric.

(b) A Yarn Preparatory Unit is having 8 Warping machines running at 500 mts/min with 57 % efficiency and having 480 ends/beam with a set length of 26000 mts/beam. Calculate number of Winding machines each having 60 spindles and running at 1000 mts/min with 86% efficiency to be required to supply wound packages having 36^s yarn count per day to meet with the requirements of the said Yarn Preparatory Unit. **07**

OR

(b) What is preventive maintenance? Explain the daily, weekly, monthly and quarterly/yearly check points for warping machines in detail. **07**

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

(b) Calculate number of warping machines, having following details, to be required to supply warper's beam to a yarn preparatory unit having 4 sizing machines running at 60 meters/min with 52 % efficiency having 2800 ends/beam : **07**

- Speed –500 meters/min
- Ends/beam – 520
- Efficiency % - 53
- Yarn count - 32^s

OR

Q.3 **(a)** The frequency of warp breaks, weft breaks, shuttle change and weft change observed for 90,000 picks are found to be 18,11,74, and 82 respectively. Calculate allocation of looms for a weaving unit having plain power looms running at 138 rpm. **07**

(b) Calculate the number of Projectile Weaving machines to be installed to utilize the production of 4 Texturing machines each having 120 spindles and running at 1200 mts/min with 93 % efficiency. Use following details : **07**

- Loom speed : 475 rpm
- Efficiency : 95 %
- Reed/Pick : 38/18,
- Width : 60 inches
- Denier of yarn as warp & weft : 140

Q.4 **(a)** Prepare Spin plan to produce rotor spun yarn of 18s Ne warp and 18sNe weft if the hank of lap is 0.0012 and T.M is 5.5. for Warp and 5.3 for weft. **07**

(b) Prepare production schedule to produce 800 kgs of rotor spun warp of 12sNe and 800 kgs of weft of 12s Ne using modern spinning line. **07**
Also calculate production of rotor in kgs/ spindle/shift if rotor rpm is 90,000, efficiency is 92% and T.M is 5.0.

OR

Q.4 **(a)** Prepare spin plan to produce carded warp yarn of 30sNe and weft of 32s , if hank of lap is 0.0014 hank and T.M is 4.0 for warp and 3.8 for weft. **07**

(b) Prepare production schedule to produce 900 kgs of carded warp of 30sNe and 800 kgs of weft of 32s Ne using modern spinning line. **07**

Hence calculate number of scutchers required in Blowroom, if scutcher with 10 inch delivery roller is running at 10 RPM, Hank of lap delivered is 0.0015 and efficiency is 85%

Q.5 **(a)** Calculate production of Ring frame in terms of kgs/shift/machine from following data : **07**
Hank of roving - 1.2
Draft - 30
Spindle RPM - 16000
T.M - 4.0
Number of spindles - 864
Efficiency - 90%
If the doff is full after 4 hours , calculate the weight and length of yarn on each bobbin.

(b) Discuss daily , monthly and quarterly checks for maintenance of Comber. **07**

OR

Q.5 **(a)** Calculate number of carding machines required to produce 1000kgs of carded sliver//shift from following data : **07**

Hank of lap fed - 0.0014
Draft - 90
Doffer diameter - 27 inch
Doffer RPM - 50
Efficiency - 85%
If the lap fed is of 50 mts , calculate the time for lap to exhaust.

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

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