

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2172903

Date: 19/11/2018

Subject Name: Production Planning & Maintenance

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

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

**MARK
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|------------|-----|--|-----------|
| Q.1 | (a) | Write the equation to calculate production of weaving loom in meters/shift, kgs/day and lbs/month. | 03 |
| | (b) | In Spinning mill blow room is working with following parameter: Hank of Lap delivered = 0.0014, Delivery speed = 40mts/min, Efficiency = 84%, Lap length = 200 mts. Calculate production of blow room in terms of kgs/Shift. | 04 |
| | (c) | Calculate allocation of looms for a weaving unit having plain power loom running at 120 rpm if the frequency of warp breaks, weft breaks, shuttle change and weft change observed for 85000 picks are found to be 18, 8, 61 and 78 respectively. | 07 |
| Q.2 | (a) | Calculate the length of yarn in meters in a wound package if the weight of packages is 1.2 kgs and count of yarn is 40 ^s . | 03 |
| | (b) | Length of warp on warpers beam is 36000 yards and number of ends on beam is 420. Net weight of yarn on beam is 500 lbs, calculate count of yarn in Ne. | 04 |
| | (c) | 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 2 sizing machines. Assume set length of 25000 meters and 480 ends/beam on warping machine. Use following details for sizing machines. Ends/beam = 2800, length of warp sheet per beam = 220 mts, speed = 65 mts/min, efficiency% = 52. | 07 |
| OR | | | |
| Q.3 | (c) | Prepare spin plan to produce rotor spun yarn of 12 ^s Ne warp and 14 ^s Ne weft with T.M. of 5.5 for warp and 5.3 for weft. The hank of lap is 0.0012. | 07 |
| | (a) | Calculate production of blow room in terms of number of laps produced/shift/scutcher, if diameter of lap roller is 10inch, rpm is 12, efficiency is 85% and length of lap is 50mts. | 03 |
| | (b) | Calculate the production of comber machine in terms of kgs/shift/machine using following data:
Feed/Nip = 8 mm, Nips/Min = 350, Hank of lap = 0.016, Noil = 10%, Efficiency = 92%. | 04 |
| | (c) | Prepare a production schedule for producing 800 kg of combed warp yarn and 600 kg of combed weft of 62 ^s Ne on modern spinning line. | 07 |

- Q.3** (a) State the importance of maintenance in sizing department. **03**
 (b) Explain in details, the daily weekly and monthly check points for winding machines. **04**
 (c) Calculate number of 2-for-1 twisting machines having 900 spindle rpm to be required to supply warp and weft yarn per day to a weaving unit to achieve 88% efficiency of 200 rapier weaving machines. Following variety of fabric is woven on the said weaving machines. **07**
 Reed/Pick = 72/68, Warp/ Weft = 62 Denier 1800 TPM / 62 Denier 1600 TPM, Fabric Width = 51 Inches, Weave = Plain, Loom Speed = 500 rpm.
- Q.4** (a) Calculate total number of ends and picks for a fabric having following details: **03**
 Reed/Pick = 80/52, Fabric length = 50000 meters, Fabric width = 52 inch.
 (b) Prepare warp and weft production schedules if weights of warp and weft are 35000 kgs and 25000 kgs respectively. **04**
 (c) Calculate the number of automatic shuttle looms running at 220 rpm with 82% efficiency to be required to produce 5.00 lac meter of following variety of fabric per month. Reed/Pick = 70/42, Warp and Weft = 30^s/32^s, Fabric width = 42 inches. **07**
- OR**
- Q.4** (a) Calculate the daily production of double width projectile loom from following data. **03**
 Loom rpm = 300, Efficiency = 89%, PPI = 60.
 (b) Find the requirement of yarn in following variety of fabric: **04**
 Type of fabric = Shirting fabric, EPI/PPI = 88/76, Reed Space = 56", Contraction = 5%, Length of fabric required = 2, 25,000 meters.
 (c) Prepare warp and weft production schedules using following details. **07**
 No of loom = 350 projectile looms running at 90% efficiency, Speed = 475 picks/min, Width of grey fabric = 3meters, warp/weft yarn denier = 600/400, Reed/Pick = 20/12.
- Q.5** (a) State the importance of maintenance in weaving industries. **03**
 (b) Calculate production of speed frame in terms of kgs/spindle/shift from following data. **04**
 Hank of sliver = 0.14, Draft = 12, Spindle rpm = 1200, T.M.= 1.0, Efficiency = 85%, Number of spindles = 160.
 (c) Calculate the number of sizing machine required, running at 65 mts/min with 45% efficiency to supply sized beams to the weaving units. **07**
 Automatic Shuttle loom speed = 210 rpm, Efficiency = 86%, Reed/Pick = 60/40, Warp/ Weft = 40^s/36^s, Fabric width = 48 inch., Production requirement = 3.5 lac meters / month.
- OR**
- Q.5** (a) Calculate production of carding machine from following data: **03**
 Doffer rpm = 40, Doffer diameter = 27 inch, Hank of lap feed = 0.0016, draft = 95, efficiency = 88%.
 (b) Calculate production of ring frame kgs/shift. Count = 36s Ne, T.M.= 4.0, spindle rpm = 16000, Efficiency = 90%, Number of spindles/machine = 1024. **04**
 (c) Calculate the time required by draw frame to produce 1500 kgs of sliver following data: **07**
 Speed = 800 mts/min, Efficiency = 92%, Hank of sliver delivered= 0.18, Number deliveries = 1.
 Also calculate the time to fill the can which can accommodate 80 kg of sliver.
