Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3172915 Date:12-01-2023

Subject Name:Production Planning in Textile

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Explain the term capital cost with suitable example.	**03**
	(b)	A textile mill wants to produce fabric of following particulars Warp/Weft : 16s/16s Ne, EPI/PPI : 72/44, R.S. : 160 cm Length wise contraction : 7% . Calculate GSM for the fabric.	**04**
	(c)	Prepare spin plan to produce Combed warp yarn of 42s Ne with T.M of 3.4 and 48s Ne weft with T.M 3.5. Hank of lap is 0.0018	**07**
Q.2	**(a)**	Discuss the term nominal count and actual count.	**03**
	(b)	Calculate time required for completion of one lap & total number of laps produced per shift from following data. Speed of lap roller 12 rpm, lap roll dia 10", length of lap produced 50 yards, cleaning time 0.30 hrs, doffing time 12 sec.	**04**
	(c)	Calculate number of carding machines required for producing 2500kgs of carded sliver /day from following parameters : • Doffer Rpm – 50 • Doffer Diameter - 27 inch • Hank of sliver delivered - 0.16 • Efficiency - 90% If the can capacity is 3000 mts of sliver, calculate the weight of sliver in can.	**07**
		OR	
	(c)	If the Warping machine speed is 500 mts/min, using 32s 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 : Ends/beam – 2800, Length of warp sheet per beam – 220 mts, Speed – 65 mts/min, Efficiency % - 52.	**07**
Q.3	**(a)**	Discuss various aspects of maintenance of Comber in detail.	**03**
	(b)	A combing department is working with following parameters : • Feed / nip - 6 mm, • Nips/min - 425 • Hank of lap fed - 0.0125 If the number of combers are 6, the average efficiency is 87% and noil removed is 10% , calculate production in terms of kgs/shift/m/c. and of department.	**04**
	(c)	Calculate number of Ring frame required for producing 1000 kgs/shift for 24s Ne, if spindle RPM is 22000 , Efficiency is 90% ,T.M is 4.0.	**07**
		OR	
Q.3	**(a)**	Explain the term running cost with suitable example.	**03**

(b) Calculate time required to feed one can in draw frame from given data. **04**

- Delivery speed 900 mpm,
- weight of sliver in can 11 Kg,
- effi:-85%,

Hank of drawn sliver 0.15.

(c) Rotor spinning plant has following requirements for a month. **07**

Count	Required qty. (Kg.)	TM	Rotor speed	%Effi
6	45000	4.6	90000	95
8	35000	4.7	90000	94
10	55000	4.7	85000	94

Calculate no. of spindle required to produce above count.

Q.4 **(a)** Calculate total number of ends and picks for a fabric having following details : **03**

• Reed / Pick – 56/26,
• Fabric Length – 8000 Meters,
• Fabric Width – 48 Inches

(b) Calculate No Of Beams Produced On A Sizing Machine In A Shift From The Following Data. Speed 50 Mpm, Effi:- 50%, No Of Ends/Beam 2200, Length Of Warp Sheet/Beam 250 Meter. **04**

(c) A loom shed is working with 120 looms running at 180 RPM & 85% efficiency. The fabric has 90 PPI and 54 inches width on loom. Calculate how many shifts of one sizing machine will be required, for one day working of loom shed, if sizing machine runs at 35 MPM with 55% efficiency? **07**

OR

Q.4 **(a)** Calculate production of draw frame in lbs/shift from the following: **03**

Count of sliver- 3.7 ktex draft- 6 efficiency- 90%
Delivery Speed – 100 mpm.

(b) Explain the straight line method & reducing balance method. **04**

(c) A textile mill wants to produce fabric of following particulars **07**

- Warp/Weft : 32s/24s Ne
- EPI/PPI : 72/38
- R.S. : 157 cm
- Length wise contraction : 5%

Work out requirement of warp and weft for 10000 meter of fabric.

Q.5 **(a)** Calculate efficiency of warping machine if speed is 600ypm and production in 24 hours is 464000 yards. **03**

(b) State the importance of maintenance in weaving department. Explain the daily, weekly, monthly and quarterly/yearly check points for automatic weaving machines in detail **04**

(c) A Twill Woven Fabric Need To Prepare Of About 2500 Meter Length. Where EPI & PPI Are 44 & 28.Warp And Weft Count Is 32'S, Warp And Weft Crimp 6%. Calculate Weight Of Warp And Weft Required For This Lot If Reed Width Is Of 52 Inch. **07**

OR

Q.5 **(a)** What will be the length of in a Nylon yarn package weighing 7 kg, count of yarn is 450 Denier. **03**

(b) Calculate time required to prepare one roving bobbin on speed frame using following data. **04**

- Spindle speed 1400 rpm,
- TPI 1.2,
- Roving hank 1.2,
- weight of roving bobbin 2.25 Kg.,

Efficiency 87%.

(c) A texturising plant has following requirements per day. **07**

- 70/36/250 -- 200 Kg.,
- 70/36 -- 850 Kg,
- 40/34/200 150 Kg,
- 40/34 200 Kg.

Calculate no of spindles running at 11500 rpm with 85% efficiency for the requirements.

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