Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3172915 Date:16-12-2024

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)**	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)	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 weft and 5.3 for weft. The hank of lap is 0.0012.	**07**
Q.2	**(a)**	Write the equation to calculate production of weaving loom in meters/shift, kgs/day and lbs/month.	**03**
	(b)	Calculate no of beams produced on a sizing machine in a shift from the following data. Speed 70 mpm, effi:- 60%, no of ends/beam 3200, length of warp sheet/beam 250 meter.	**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**
		OR	
	(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)**	What will be the hank deliver on a lap former if sliver hank is of 0.17. Draft and doubling are 1.3 & 18 respectively	**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 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. Reed/Pick = 72/68, Warp/ Weft = 62 Denier1800 TPM / 62 Denier 1600 TPM, Fabric Width = 51 Inches, Weave = Plain, Loom Speed = 500 rpm.	**07**
		OR	
Q.3	**(a)**	Write production formula for a double-width high speed rapier loom.	**03**
	(b)	Prepare warp and weft production schedules if weights of warp and weft are 35000 kgs and 25000 kgs respectively.	**04**
	(c)	Twill woven fabric need to prepare of about 2800 meter length. Where EPI & PPI are 40 & 25.warp and weft count is 30's, warp and weft crimp 6%. Calculate weight of warp and weft required for this lot if reed width is of 54 inch.	**07**

Q.4	**(a)**	Calculate the daily production of double width projectile loom from following data. Loom rpm = 300, Efficiency = 89%, PPI = 60.	**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)	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 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.4	**(a)**	Calculate total number of ends and picks for a fabric having following details : Reed / Pick – 60/32,Fabric Length – 4000 Meters, Fabric Width – 42 Inches	**03**
	(b)	It is required to produce 7000 kg of combed yarn of 40's ne. Calculate total raw cotton required for the same.	**04**
	(c)	Calculate the number of sizing machine required, running at 65 mts/min with 45% efficiency to supply sized beams to the weaving units. 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.	**07**

Q.5	**(a)**	Discuss the term capital cost.	**03**
	(b)	Discuss about different types of maintenance & its importance.	**04**
	(c)	Calculate the number of water jet weaving machines to be installed to match with the production capacity of a yarn preparatory unit having 9 texturing machines each having 120 spindles and running at 1100 mts/min with 94 % efficiency. These water jet weaving machines are running at 650 rpm with 90 % efficiency and fabric having reed/pick of 30/20, 54 inches width and using 340 denier of yarn as warp & weft.	**07**

OR

Q.5	**(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 required no of ring frame and speed frame spindle for the production of 2500 kg yarn of 40's combed. Where ring frame spindle speed 19500 rpm, time 8 hrs, waste 3%, t.p.i-25, draft 22, efficiency 90%. For speed frame flyer rpm 1400 efficiency 85% & tpi 1.3	**07**

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