Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (NEW) EXAMINATION – SUMMER 2022

Subject Code:3172915   **Date:10/06/2022**

Subject Name:Production Planning in Textile

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

			MARK
Q.1	**(a)**	What will be the length of yarn in a cotton yarn package weighing 3 kg, count of yarn is 80's	**3**
	(b)	Discuss key routine maintenance points for carding	**4**
	(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.	**7**
Q.2	**(a)**	Write production formula for modern comber in Kg/day.	**3**
	(b)	A carding machine running at 110 doffer rpm with 87% efficiency. Sliver hank 0.12. Calculate production in kg/day	**4**
	(c)	Prepare spin plan and production schedule for the 1500 kg/shift rotor yarn of 14's Ne. Consider suitable data for a modern machine combination.	**7**

<div align="center">OR</div>

	(c)	A textile mill wants to produce fabric of following particulars:- Warp/Weft : 14s/14s Ne, EPI/PPI : 78/42, R.S.:- 157 cm, length wise contraction : 7%. Find out GSM of fabric. Also work out requirement of warp and weft yarn per 100 m of fabric.	**7**
Q.3	**(a)**	Enlist daily & weekly maintenance check points for ring frame	**3**
	(b)	Prepare warp and weft production schedules if the weights of warp and weft are 4000 kgs and 3500 kgs respectively. Assume modern sequence of machines.	**4**
	(c)	If the warping machine speed is 550 Mts/Min, using 32s yarn count and efficiency % is 55, 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 – 3200 • length of warp sheet per beam – 350 mts • speed – 60 mts/min • efficiency % - 50	**7**

<div align="center">OR</div>

Q.3	**(a)**	Discuss the term capital cost.	**3**
	(b)	An air jet loom running at 850 rpm with 35 picks/inch. Calculate time required to weave 3500 meter of fabric on a loom with 85% efficiency.	**4**

(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.　　**7**

Q.4 **(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.　　**3**

(b) Discuss about different types of maintenance & its importance.　　**4**

(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　　**7**

OR

Q.4 **(a)** Discuss key routine maintenance points for winding machine　　**3**

(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.　　**4**

(c) State the importance of maintenance in weaving department. Explain the daily, weekly, monthly and quarterly/yearly check points for automatic weaving machines in detail.　　**7**

Q.5 **(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　　**3**

(b) A set of 5 beam each containing 3000 meter of warp is to be prepared. If speed is 500 mpm & effi.-80%. Calculate a time required to prepare a set.　　**4**

(c) Prepare warp & weft production schedules to produce 50,000 kgs of grey fabric per day having following details :
• reed/pick – 70/30
• warp/weft – 30s/30s
• fabric width – 54 inches
• weave – 2/1 twill　　**7**

OR

Q.5 **(a)** Write production formula for a double-width high speed rapier loom.　　**3**

(b) It is required to produce 7000 kg of combed yarn of 40's ne. Calculate total raw cotton required for the same.　　**4**

(c) A comber machine running at 480 nips/min, with feed/nip of 6.5 mm. calculate no of comber required for a 3200 kg/shift. Consider lap hank of 0.0125 and noil % of 12. Efficiency of machine is 88%　　**7**

****