GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (OLD) EXAMINATION – SUMMER 2019

Subject Code: 172903   **Date: 14/05/2019**

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)**	Calculate production of caring machine and number of cards required to produce 1600 kgs of carded sliver per shift using following data. Doffer rpm = 27, Doffer diameter = 27 inch, Hank of lap feed = 0.0016, draft = 95, efficiency=88%.	**07**
	(b)	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 = $30^s/32^s$ Ne, Fabric width = 42 inches.	**07**
Q.2	**(a)**	Prepare spin plan for producing 40^s carded warp yarn if lap weight is 14 oz/yard and twist contraction is 5%.	**07**
	(b)	Calculate the number of Pirn winding machine each of 10 spindles to be required to supply pirns having 30^s yarn count per day to meet the requirement of a weaving unit having 300 plain power looms each of 48 inches of width, 52 picks/inch and running at125 rpm.	**07**
		OR	
	(b)	Prepare warp and weft production schedules using following details. 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.	**07**
Q.3	**(a)**	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**
	(b)	Prepare production schedule for producing 1200 kgs/shift of rotor spun yarn of 24^s Ne warp using 30 mm cotton fiber. Calculate input required art Blow room. If each cotton bale is of 200kg. Calculate number of bales consumed/shift.	**07**
		OR	
Q.3	**(a)**	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**
	(b)	Prepare a spin plan for producing rotor spun yarn of 12^s Ne warp yarn if cotton used is 1 inch staple and T.M. is 5.2.	**07**
Q.4	**(a)**	State the importance of maintenance in weaving industries. Explain in detail the daily, weekly, monthly, quarterly and yearly check point for weaving machines.	**07**
	(b)	Calculate the weight of warp ad weft threads to be required to produce 1.00 lac meters for grey fabric per day having following details. Reed / Pick = 80/52, Warp/ Weft = $40^s / 36^s$, Fabric width = 48 inches.	**07**

OR

Q.4 **(a)** A cloth 44.5" wide (including selvedge) is woven with 72" reed, 32^s warp, 40^s **07**
weft, 64 PPI, Denting – ends/dent (body), 4 ends/dent (selvedges are 0.25" on
each side. Length of cloth piece = 120 yds, contraction = 7%. Calculate total
weight of fabric and total ends in a fabric.

(b) Calculate the number of sizing machine required, running at 65 mts/min with **07**
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.

Q.5 **(a)** Calculate allocation of looms for a weaving unit having plain power looms **07**
running at 160 rpm. The frequency of warp breaks, weft breaks, shuttle change
and weft change observed for 1, 10,000 picks are found to be 22, 14, 78 and 86
respectively.

(b) Calculate the time required to exhaust one lap on carding machine from given **07**
data. Lap length = 45 yards, Draft = 80, Doffer dia = 27inch, Doffer rpm = 20,
Efficiency = 80%.

OR

Q.5 **(a)** Calculate production of ring frame and number of ring frame required for **07**
producing 100 kgs/shift.
Count = 36^s Ne , T.M. = 4.0, Spindle RPM = 16000, Efficiency = 90%, Number
of spindles/ machine = 1024.

(b) Calculate production of combers required to have 1200 kgs/shift production. **07**
Feed/Nip = 8mm, Nips/min = 240, Efficiency = 85%, Hank of lap fed = 0.016,
Noil = 10%.

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