Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEMESTER– 7th EXAMINATION – SUMMER 2015

Subject code: - 172903 **Date:08/05/2015**

Subject Name: - Production Planning and Maintenance

Time: 02.30PM-05.00PM **Total Marks: 70**

Instructions:

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

Q.1 In a weaving unit 45 projectile looms are running with following quality of fabrics. **14**

Fabric details:-

R.S. = 58”	Reed count = 80^s	Wp/Wt = $2/80^s/2/80^s$
Length contraction = 6%	End/dent = 2	GSM = 150
Loom width = 130”	Loom RPM = 310	Loom efficiency = 90%

Calculate:-

I. Linear weight/meter.

II. How many beams will be required per week for the above shed if max length of yarn on beam is 2900mt (Ignore selvedge during calculation).

Q.2 (a) Calculate weight of doff, time after which doff is to be taken and time after which roving bobbin will be exhausted on ring frame from following data. **07**

Speed of RF - 15000 RPM, Eff. - 87%, Count of yarn - 42^s Ne, No of Spindles - 1008, Waste at RF - 2.5%, Count of Roving - 0.59 ktex, TM–4.0, Wt. of roving bobbin - 3.5 lbs, Length of yarn on ring bobbin – 4200 m

(b) Discuss types of maintenance. Write critical maintenance check points for blow room and comber. **07**

OR

(b) What is maintenance? Write critical maintenance check points for automatic loom and sizing. **07**

Q.3 (a) A loom shed has 80 weaver’s beam available of 4800 ends at 96 ends/inch. Length of yarn on weaver’s beam 2700 m each. Count of yarn 50^sNe/50^s Ne. Find out for how many days 20 projectile loom can be kept working if the speed is 360 rpm with 91% efficiency. The loom has 130” max reed space. Warp contraction 6%, fabric weight 100 GSM. PPI – 72. **07**

(b) Calculate how many times warping creel needs to be changed from following data. **07**

Maximum length on warper’s beam - 20000 yds, length of yarn on weaver’s beam - 2000 yds, No. of weavers beam required - 20, No. of threads in creel - 592, No. of ends in weaver’s beam - 5328, Count of yarn - 50^s Ne, Wt of yarn on package - 1.75kg

OR

Q.3 (a) A water jet loom shed works with the following particulars. Calculate time after which weft bobbin is to be replaced on each variety of fabric. **07**

Type	*No of looms*	*Speed RPM/ Eff. %*	*R.S.(cm)*	*Weft Denier*	*PPI*	*Wt. of yarn on bobbin (kg)*
A	98	520/97	135	55	96	1.3
B	39	600/96	125	75	90	1.1
C	78	580/92	145	65	94	1.2

(b) A mill wants to produce 8500 m of a particular fabric every day. Calculate no. of bobbins required from winding and pirn winding departments from following details. **07**

R.S.-45", EPI–80, Weight of fabric–175gsm, Count–40 ^{s}/34 ^{s} Ne, speed/Eff.–1100 mpm /85%, Length contraction – 6%, Length of yarn on wound bobbin – 70000 m,
Weight of yarn on pirn – 1.2 ozs, Winding Pirn winding speed/Eff. – 500ypm/75%,

Q.4 A spinning unit supplies following yarn to a weaving unit per day (Running 2 shifts a day) **14**

Mixing	Count	Fibres	TM	Prod. (kg)
A	32^{s}K	100% Cotton	4.2	600
	40^{s}C		4.0	700
B	54^{s}P/C	67% Poly & 33% Cotton	3.9	300
	56^{s}P/C		3.9	250

Work out number of blow room laps required per hour from following data.
Lap roller speed: - 5mpm Efficiency: - 85%
Count of lap: - 480g/m Lap length: - 41yds

OR

Q.4 (a) Using the same data table given above in Q.4 work out RF spindles required to be run per shift from following further data. **07**

Count	Spindle speed (RPM)	Efficiency (%)
34^{s}K	13000	86
40^{s}C	13500	88
54^{s}P/C	14000	88
56^{s}P/C	14500	90

Q.4 (b) Calculate time after which the lap will be exhausted on card from following data. **07**
Lap count - 492 ktex, Lap length - 40 mt, Doffer dia - 27", Doffer rpm - 32,
Tension Draft - 1.01, Effi - 85%,Draft at card - 100

Q.5 A texturising plant has following requirement per day: **14**

Count (denier)	Production in kg
75/36	1100
75/36/400	900
140/60	700
140/60/350	800

Calculate the no. of spindle required of SDS 600(94% efficiency) and of TFO (Running at 13600 RPM and 91% efficiency)

OR

Q.5 An OE spinning plant has following requirement per month (30 working days at 24 hrs per day) **14**

Count	Requirement (kgs)	TM	Rotor speed (RPM)	Efficiency (%)
8^s	30000	4.6	75000	95
9^s	65000	4.5	85000	95

Calculate no. of OE spindles required to produce above counts. Also calculate no. of card required from following data :

Doffer diameter = 27" Doffer RPM = 38 Tension draft = 1.01
Count of sliver = 4.91ktex

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