

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3172915****Date:19-12-2023****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) Justify:- Regular maintenance of the plant improves the efficiency of the unit.	03
(b) Prepare production schedule to prepare 1200 kgs /day of carded Yarn of 26s Ne on	04
(c) A textile mill wants to produce fabric of following particulars	07
Warp/Weft : 16s/16s Ne	
EPI/PPI : 75/48	
R.S. : 157 cm Length wise contraction : 6%	
Find out GSM of fabric. Also work out requirement of warp and weft yarn per 100 m of fabric.(Ignore selvedge and waste)	
Q.2 (a) Enlist weekly and Daily maintenance check points for rapier loom.	03
(b) Calculate time required to prepare one roving bobbin on speed frame using following data. Spindle speed 1450 rpm, TPI 1.2, Roving hank 1.3, weight of roving bobbin 2 Kg., Efficiency 80%.	04
(c) 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 2280, Length Of Warp Sheet/Beam 300 Meter.	07
OR	
(c) Prepare Spin Plan And Production Schedule For The 1000 kg/Shift Combed Yarn Of 60'S Ne. Consider Suitable Data For A Modern Machine Combination.	07
Q.3 (a) Enlist weekly and Monthly maintenance check points for Ring frame machine.	03
(b) Calculate production of draw frame department in lbs/shift from the following:	04
Count of sliver- 1.58Ne, draft- 6 efficiency- 90%	
Delivery Speed – 300 mpm, No of delivery- 2, No. Of DF - 5	
(c) Prepare production schedule to prepare 1800 kgs /shift of Rotor Yarn of 8s Ne. Hence calculate number of Rotor spindles required from following data : Spindle rpm – 100000, T.M - 4.6, Efficiency - 92%.	07
OR	
Q.3 (a) Enlist weekly and Monthly maintenance check points for Winding machine.	03
(b) A combing department is working with following parameters :	04
Feed / nip - 6 mm,	
Nips/min - 425	
Hank of lap fed - 0.0125	
If the number of combers are 5, the average efficiency is 89% and noil removed is 12%, calculate production in terms of kgs/shift/m/c. And of department.	
(c) A Twill Woven Fabric Need To Prepare Of About 2500 Meter Length.	07

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 56 Inch.

- Q.4 (a)** Discuss the maintenance schedule of TFO **03**
- (b)** Calculate number of carding machines required for producing 6500kgs of carded sliver /day from following parameters : **04**
Doffer Rpm – 50
Doffer Diameter - 27 inch
Hank of sliver delivered - 0.16
Efficiency - 90%
If the can capacity is 2700 mts of sliver, calculate the weight of sliver in can.
- (c)** A textile mill wants to produce fabric of following particulars **07**
Warp/Weft : 30s Ne
EPI/PPI : 72/48
R.S. : 162 cm
Length wise contraction : 5%
Calculate the GSM & GLM of fabric.

OR

- Q.4 (a)** Calculate length of yarn in a cone having 24' Ne and weight of package is 2.8 kg. **03**
- (b)** Explain the straight line method & reducing balance method. **04**
- (c)** Calculate time required for completion of one lap & total number of laps produced per shift from following data. **07**
Speed of lap roller 12 rpm, lap roll dia 10", length of lap produced 50 yards, cleaning time 0.30 hrs/shift, doffing time 12 sec.
- Q.5 (a)** Calculate length of yarn in a spool having 1200 Denier and weight of package is 12 kg. **03**
- (b)** Explain the term capital cost & running cost **04**
- (c)** Following varieties of fabrics are to be produced in a weaving unit during the year : **07**
• 2/2, 1/2 twill fabric – 25.00 lac mts, Reed/pick – 64/36
• 1/1, 4/3 twill fabric – 25.00 lac metres, Reed/pick – 82/42
• Fabric Width – 48 inches
• Loom Speed – 225 rpm
• Efficiency % - 80
Calculate the number of Shuttle Looms to be required to produce the said quantity of fabric

OR

- Q.5 (a)** Discuss various aspects of maintenance of Comber. **03**
- (b)** Calculate time required to feed one can in draw frame from given data. **04**
Delivery speed 600YPM, weight of sliver in can 11 Kg, effi:-85%, Hank of drawn sliver 0.15.
- (c)** A texturizing plant has following requirements per day. **07**
70/36/300 250 Kg.,
70/36 750 Kg,
40/34/200 100 Kg,
40/34 250 Kg.
There are 2 texturizing machine running with 600 mpm @ 95% efficiency with 216 position. And 3 texturizing machine with 268 no of spindles running at 11000 rpm with 80% efficiency allocated for the requirements.
