

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-III(Textile Technology)Examination December 2009

Subject code: 132905

Subject Name: Basic Engineering In Textile

Date: 29 / 12 / 2009

Time: 11.00 am – 1.30 pm

Total Marks: 70

Instructions:

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

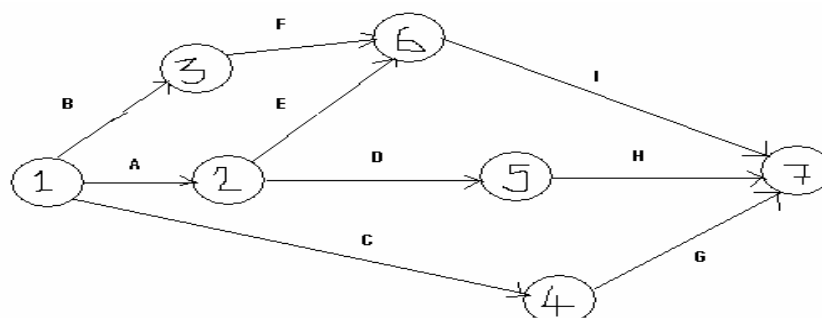
- Q.1**
- (a) 1. Define Method Study & list out the steps of Method Study procedure. 02
2. List out process chart events and show it as symbol. 02
3. Give the list of Primary and Secondary questioning for
Critically examination of the recorded events in sequence 03
- (b) 1. Write short note on SIMO chart. 03
2. Draw two handed process chart for assembly of nut and bolt and give
summary for same. 04

- Q.2**
- (a) 1. Give the list of Work Measurement techniques. 02
2. Define Standard time and Basic time. 02
3. Explain steps for selection of worker for time study. 03
- (b) 1. Compare work sampling with time study. 03
2. 2500 observations were conducted and it was found that the activity under
study occurred 1200 times; determine the limits of accuracy and limits of
error. 04

OR

- (b) 1. Compare C.P.M. and P.E.R.T methods of project planning. 03
2. Define and distinguish the earliest and the latest start time and the earliest
and the latest finish time. 04
Explain optimistic time, pessimistic time, most likely time in
relation to PERT.

- Q.3** (a) A project is represented by the following data & network. 07



Task	A	B	C	D	E	F	G	H	I
t_o	5	18	26	16	15	6	7	7	3
t_p	10	22	40	20	25	12	12	9	5
t_m	8	20	33	18	20	9	10	8	4

Draw the network diagram using event on Arrow method and determine; 1) Expected task times and their variances. 2) The earliest

And latest expected time to reach each event. 3) The critical path.

- (b) 1. State the assumptions of linear programming and explain mathematical formulation of linear programming. **03**
2. Solve the following LPP by Graphical method. **04**
- Max. $Z = 60X_1 + 40X_2$
 Subject to constraints :
 $2X_1 + X_2 \leq 60$
 $0 \leq X_1 \leq 25$
 $0 \leq X_2 \leq 35$

OR

- Q.3 (a)** Draw flow chart of simplex algorithm. **07**
- (b) 1. A company sells two different products A and B, making a profit of Rs.40 and Rs.30 per unit of them. The company produces with total capacity of 30,000 man-hours. It takes 3 hours to produce a unit of A and 1 hour for a unit of B. In market maximum number of units of A can be sold is 8,000 units and that of B is 12,000 units. Subject to these limitations, formulate this problem as a linear programming model to maximize the production of A and B. **04**
2. Evening shift workers of a textile mill works five consecutive days and have two consecutive days off. Their five days of work can start on any day of the week and the schedule rotates indefinitely. The mill requires the following minimum number of workers working. **03**
- | | | | | | | |
|-----|-----|-------|------|-------|------|------|
| Sun | Mon | Tues. | Wed. | Thus. | Fri. | Sat. |
| 35 | 55 | 60 | 50 | 60 | 50 | 45 |
- No more than 40 workers can start their five working days on the same day. Formulate LPP to minimize the number of workers employed by the mill.

- Q.4 (a)** 1. Explain necessity of water treatment of boiler feed water **03**
 2. Explain any one feed water treatment method with neat sketch. **04**
- (b) 1. List out the factors affecting the choice of a Boiler. **03**
 2. Explain package type of boiler in detail. **04**

OR

- Q.4 (a)** Obtain an optimal solution to the transportation problem by MODI method to minimize transportation cost from given data. **07**

	D_1	D_2	D_3	D_4	Supply
S_1	19	30	50	10	7
S_2	70	30	40	60	9
S_3	40	8	70	20	18
Demand	5	8	7	14	34

- (b)** 1. Differentiate breakdown maintenance and preventive maintenance. **03**
 2. Explain functions or elements of preventive maintenance. **04**

- Q.5 (a)** 1. Explain importance of R.H. in textile industry. **03**

2. Explain cooling with adiabatic humidification of air. **04**

- (b)** 1. Define: moisture, dry bulb temperature, wet bulb temperature, humidity ratio, absolute humidity, relative humidity. **03**

2. Explain humidification by air washer method with neat sketch. **04**

OR

- Q.5 (a)** Explain the distribution of different services like steam, water, compressed air etc., in textile industries with specific application of each in textile. **07**

- (b)** A workshop has five mechanics with five jobs to be performed. The time (in hours) each man will take to perform each job is given as below: **07**

		Mechanics				
		I	II	III	IV	V
Jobs	A	10	5	13	15	16
	B	3	9	18	13	6
	C	10	7	2	2	2
	D	7	11	9	7	12
	E	7	9	10	4	12

How should the jobs be assigned, one per worker, so as to minimize the total man-hours?
