Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–III • EXAMINATION – WINTER 2013

Subject Code: 132905   **Date: 26-11-2013**
Subject Name: Basic Engineering in Textiles
Time: 02.30 pm - 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)** What is the function of Boiler? Give detail classification of Boiler **07**
   (b) Define method study. What are its objectives? Explain the procedure for **07**
   method study.

Q.2 **(a)** Determine an initial basic feasible solution to the following transportation **07**
   problem using a)North-west corner method (b) Vogel's approximation method

		Ware houses				
		W_1	W_2	W_3	W_4	Capacity
Factory	F_1	19	30	50	10	7
	F_2	70	30	40	60	9
	F_3	40	8	70	20	18
Requirement		5	8	7	14	

   (b) Distinguish between Critical path method (CPM) and Project evaluation review **07**
   techniques (PERT)

OR

   (b) Use simplex method to solve LPP: **07**
   Maximize $Z=3x_1+2x_2$,
   Subject to $x_1+x_2 \leq 4$,
         $x_1- x_2 \leq 2$,
         $x_1, x_2 \geq 0$.

Q.3 **(a)** Tasks A, B, C…..H,I constitute a project. The notation X<Y means that the task **07**
   X must be completed before Y is started. with the notation
   A<D, A<E, B<F, D<F, C<G, C<H, F<I, G<I
   Draw a network represents the sequence of tasks and find minimum time of
   completion of the project. When time (in days) of completion of each task is as
   follows. Find the critical path.

Task	A	B	C	D	E	F	G	H	I
Time(days)	8	10	8	10	16	17	18	14	9

   (b) Differentiate between predictive maintenance and preventive maintenance **07**

OR

Q.3 **(a)** 1) What is air conditioning? **02**
      2) What is the need of humidification **02**
      3) What are the different methods employed for humidification? **03**

(b) A firm makes two types of furniture chairs and tables. The contribution for each product as calculated by the accounting department is Rs. 20 per chair and Rs. 30 per table. Both products are processed on three machines M_1, M_2 and M_3. the time required (in hours) by each product and total time available per week on each machine are as follow: **07**

Machine	Chair	Table	Available hours per week
M_1	3	3	36
M_2	5	2	50
M_3	2	6	60

How should the manufacturer schedule his production in order to maximize the contribution? Formulate the problem as a linear programming problem.

Q.4 (a) The following table shows the jobs of a network along with their time estimates. the time estimates are in days: **07**

Job	1-2	1-6	2-3	2-4	3-5	4-5	5-8	6-7	7-8
Optimistic (a)	3	2	6	2	5	3	1	3	4
Most likely (m)	6	5	12	5	11	6	4	9	19
Pessimistic (b)	15	14	30	8	17	15	7	27	28

    1) Draw the project network
    2) Find the critical path
    3) Find the probability that the project should be completed in 31 days

(b) Explain the meaning of the following terms **07**
    1) Normal time 2) Standard time 3) Work sampling

OR

Q.4 (a) 1) Give the general formulation of LPP **03**
2) Which methods are used for getting initial solution of Transportation method **02**
3) Which method is used to get the solution of assignment method **02**

(b) Which are the symbols used for conducting method study? explain in brief **07**

Q.5 (a) Why feed water treatment is necessary before supplying to the boiler? What do you understand by external water treatment **07**

(b) Explain principal techniques of work measurement and their applications **07**

OR

Q.5 (a) Differentiate fire tube boiler and water tube boiler **07**

(b) Five salesmen are to be assigned to five territories. Based on the past performance, the following table shows the annual sales (in rupees lakhs) that can be generated by each salesman in each territory. find the optimal assignment **07**

Salesman	Territory				
	T_1	T_2	T_3	T_4	T_5
A	26	14	10	12	9
B	31	27	30	14	16
C	15	18	16	25	30
D	17	12	21	30	25
E	20	19	25	16	10

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