Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – SUMMER • 2014

Subject Code: 132905 **Date: 23-05-2014**

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)** Write a short note on Breakdown and preventive maintenance **07**

(b) Explain principle of fire tube and water tube boiler **07**

Q.2 **(a)** Use the graphical method to solve the following LP problem **07**

Maximize $Z = 15X_1+10X_2$

Subject to $4X_1 + 6X_2 \leq 360$

$3X_1 \leq 180$

$5X_2 \leq 200$

$X_1, X_2 \geq 0$

(b) Write a short note on Flow process chart **07**

OR

(b) Define Steam Boiler. What are requirement of Boiler? **07**

Q.3 **(a)** What are the different methods for humidification? Explain any one in detail **07**

(b) A manufacturer produces two types of models A and B. each model of type A requires 4 hours of grinding and 2hours of polishing; whereas each model of type B requires 2 hours of grinding and 5 hours of polishing. The manufacturers have 2 grinders and 3 polishers. Each grinder works 40 hours a week and each polishers work for 60 hours a week. Profit on A model is Rs. 3.00 and on a model B is Rs. 4.00. Whatever is produced in a week is sold in the market. How should the manufacturer allocate his production capacity to the two types of models, so that he may make the maximum profit in a week **07**

OR

Q.3 **(a)** Define the following terms in CPM **07**

Float, Event ,Critical path

Define following terms in PERT

Optimistic time, Pessimistic time

(b) Use Vogel's approximation method in order to find the initial basic feasible solution to the transportation problem **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

Q.4 **(a)** A department of a company has five employees with five jobs to be performed. The time that each man takes to perform each job is given in the effectiveness matrix **07**

Jobs	Employees				
	I	II	III	IV	V
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 allocated, one per employee, so as to minimize the total man-hours?

(b) What are objectives and various techniques of work measurement **07**

OR

Q.4 **(a)** Write steps of Hungarian method for solving Assignment problem **07**

(b) What is air conditioning? Give function of various component used in air conditioner **07**

Q.5 **(a)** The three estimates for a activities of a PERT project are given below: **07**

Activity	Estimate duration in days		
	Optimistic (a)	Most likely (m)	Pessimistic (b)
1-2	5	6	7
1-3	1	1	7
1-4	2	4	12
2-5	3	6	15
3-5	1	1	1
4-6	2	2	8
5-6	1	4	7

Draw the project network. Find out Critical path of the project and project duration. What is the probability that project will be completed at least 5 days earlier than expected.

(b) What are the various recording techniques? Explain significance, construction and application of any one recording techniques. **07**

OR

Q.5 **(a)** Draw the network and determine the critical path for the given data. Also calculate floats involved in CPM. **07**

Job	1-2	1-3	2-4	3-4	3-5	4-5	4-6	5-6
Duration	6	5	10	3	4	6	2	9

(b) Enlist various feed water treatment. Explain any one of them **07**

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