Seat No.:	Enrolment No.
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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
- Q.2 (a) Use the graphical method to solve the following LP problem

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Maximize $Z = 15X_1 + 10X_2$ Subject to $4X_1 + 6X_2 \le 360$

 $3X_1 \le 180$

 $5X_2\!\leq\!200$

 $X_1, X_2 \ge 0$

(b) Write a short note on Flow process chart

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- **(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

OR

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

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

	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

Loha	Employees					
Jobs	I	II	III	IV	V	
A	10	5	13	15	16	
В	3	9	18	13	6	
С	10	7	2	2	2	
D	7	11	9	7	12	
Е	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

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

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

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

1 3 6						
Activity	Estimate duration in days					
Activity	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.

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

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	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

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