Seat No.:	Enrolment No.

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER- III EXAMINATION - SUMMER 2015** 

Subject Code: 132905 Date:04/06/2015

**Subject Name: Basic Engineering In Textile** 

Time:02.30pm-05.00pm 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) Differentiate fire tube and water tube boilers.

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- (b) Differentiate breakdown maintenance and preventive maintenance. Explain 07 functions or elements of preventive maintenance.
- Q.2 (a) Write short note on SIMO chart. Draw two handed process chart for assembly of nut and bolt and give summary for same.
  - **(b)** Solve the following LPP by graphical method.

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Maximize  $Z = 6X_1 + 7X_2$ Subject to,  $2X_1 + 3X_2 \le 12$  $2X_1 + X_2 \le 8$  $X_1 \ge 0, X_2 \ge 0$ 

OR

- (b) Give the list of Work Measurement techniques. Explain steps for selection of worker for time study.
- Q.3 (a) A company has three production facilities S<sub>1</sub>, S<sub>2</sub>, and S<sub>3</sub> with production capacity of 7, 9 and 18 units (in 100s) per week of product, respectively. These units are to be shipped to four warehouses D<sub>1</sub>, D<sub>2</sub>, D<sub>3</sub> and D<sub>4</sub> with requirement of 5, 8, 7 and 14 units (in 100s) per week. The transportation costs per unit between factories to warehouses are given in table below:

		<u> </u>			
	$D_1$	$D_2$	$D_3$	$D_4$	Availability
$S_1$	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

Use least cost method (LCM) to find initial basic feasible solution to the transportation problem.

**(b)** Define work measurement technique. Explain the basic procedure for workstudy and its definition.

OR

- Q.3 (a) Define: Absolute humidity, WBT, DPT. Explain humidification and 07 dehumidification.
  - **(b)** Use the simplex method to solve the following LPP problem

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 $\begin{array}{ll} \text{Maximize} & Z = 3X_1 + 5X_2 + 4X_3 \\ \text{Subject to,} & 2X_1 + 3X_2 \leq 8 \\ 2X_2 + 5X_3 \leq 10 \\ 3X_1 + 2X_2 + 4X_3 \leq 15 \\ X_1, X_2, X_3 \geq 0 \end{array}$ 

**Q.4** (a) What is the function of Boiler? Give detail classification of Boiler.

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(b) A company has 4 machines to do 3 jobs. Each job can be assigned to only one machine. The cost of each job on each machine is given below. Determine the job assignments that will minimize the total cost.

Machine

		W	X	Y	Z
Job	A	18	24	28	32
	В	8	13	17	18
	С	10	15	19	22

OR

**Q.4** (a) Listed in the table are the activities and sequencing necessary for a maintenance job on the heat exchangers in a refinery.

Activity	Description	Predecessor Activity
A	Dismantle pipe connections	
В	Dismantle heater, closure and floating front	A
С	Remove tube bundles	В
D	Clean bolts	В
Е	Clean heater and floating head front	В
F	Clean tube bundle	С
G	Clean shell	С
Н	Replace tube bundle	F,G
I	Prepare shell pressure test	D,E,H
J	Prepare tube pressure test and reassemble	I

Draw a network diagram of activities for the project.

**(b)** Difference between PERT and CPM

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Q.5 (a) Explain cooling with adiabatic humidification of air.

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(b) Explain any one feed water treatment method with neat sketch.

## OR

Q.5 (a) Draw a network for the following project and number the events according to Fulkerson's rule:

A is the start event and K is the end event,

A precedes event B,

J is the successor event to F.

C and D are successor events to B,

D is the preceding event to G,

E and F occur after event C.

E precedes F,

C restraints the occurrence of G and G precedes H,

H precedes J and K succeeds J,

F restraints the occurrence of H.

**(b)** What is float? Explain different types of float.

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