Seat No.:	Enrolment No.

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

BE - SEMESTER-III (New) EXAMINATION - WINTER 2015

Subject Code:2132905 Date:29/12/2015

**Subject Name: Basic Engineering in Textile** 

Time: 2:30pm to 5:00pm Total Marks: 70

**Instructions:** 

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

one cities to other as under

			MARKS
Q.1		Short Questions	14
•	1	How to determine row and column penalties in Vogel's	
		approximation profit maximization method?	
	2	Which method is used to come up with a solution to the	
		assignment problem?	
	3	What is the function of boiler?	
	4	Which maintenance is also called scheduled maintenance?	
	5	Define method study.	
	6	In process chart which symbol is used for storage?	
	7	Define optimistic time in PERT	
	8	What is slack variable in linear programming?	
	9	What is a contingency allowance?	
	10	Which method is used to check optimality in transportation problem	
	11	What is internally fired boiler?	
	12	When we add dummy row or dummy column in assignment	
		problem?	
	13	Define basic time in work measurement technique	
	14	How to compute total float for activity in network	
<b>Q.2</b>	(a)	Define boiler. List the essential parts of boiler	03
	<b>(b)</b>	State the factors affecting the selection of boiler	04
	<b>(c)</b>	Solve graphically the LPP	07
		Maximize $Z=45x_1+80x_2$	
		Subject to, $5x_1 + 20x_2 \le 400$	
		$10x_1 + 15x_2 \le 450$	
		$x_1 \ge 0, x_2 \ge 0$	
	(a)	OR	07
	(c)	What is man and machine chart? How it is used to make a method analysis?	07
Q.3	(a)	Define: Dry bulb temperature, Wet bulb temperature, Dew bulb	03
Q.S	(a)	temperature	03
	<b>(b)</b>	What is need for humidification and air conditioning?	04
	(c)	Explain necessity of water treatment of boiler feed water?	07
	(-)	Explain any one feed water treatment method with neat sketch	
		OR	
Q.3	(a)	What is PERT? Define three time estimates	03
_	<b>(b)</b>	Explain how to estimate expected time to complete the activity	04
		and variance in PERT technique.	
	<b>(c)</b>	A transport corporation has three vehicles in three cities. Each of	07
		vehicles can be assigned four cities. The distance differs from	

	$C_1$	$C_2$	C <sub>3</sub>	C <sub>4</sub>
A	33	40	43	32
В	42	30	31	24
С	40	31	37	31

Assign a vehicle to city in a way that total distance travelled is minimized.

Q.4 (a) State steps involved in method study procedure

03

(b) Draw a material type flow process chart for making the casting ready for machining

04

(c) Calculate the initial feasible solution for the transportation problem by Vogel's approximation method

07

	$\mathbf{W}_1$	$W_2$	$W_3$	$W_4$	Capacity
$M_1$	19	30	50	10	7
$M_2$	70	30	40	60	9
$M_3$	40	8	70	20	18
Requirements	5	8	7	14	4

OR

**O.4** (a) Differentiate between fire tube and water tube boiler

03 04

(b) Enumerate the advantages of water tube boiler over the fire tube boiler

07

(c) The following table shows the job of a project with their duration in days. Draw the network and determine critical path. Also calculate the floats.

Task	1-2	1-3	1-4	2-3	2-6	3-5	4-5	4-6	5-6
Time (Days)	8	10	8	10	16	17	18	14	9

Q.5 (a) Define time study.name the time study equipment

03

**(b)** What is relaxation allowance? Why it is given?

04

Use the simplex method to solve the following LPP (c)

**07** 

Maximize  $Z = 10X_1 + X_2 + 2X_3$ Subject to,  $X_1 + X_2 - 2X_3 \le 10$  $4X_1+X_2+X_3 \le 20$  $X_1 \ge 0, X_2 \ge 0, X_3 \ge 0$ 

Q.5 (a) What are the various maintenance philosophies?

03

(b) Explain importance of preventive maintenance in industries

04

A small engineering project consists of six activities. The three estimates in number of days for each activity are given below.

07

Activity	Optimistic	Most likely	Pessimistic	
Activity	time(t <sub>o</sub> )	time(t <sub>m</sub> )	time (t <sub>p</sub> )	
1-2	2	5	8	
2-3	1	1	1	
3-5	0	6	18	
5-6	7	7	7	
1-4	3	3	3	
4-5	2	8	14	

- 1) Construct network diagram and project duration
- 2)Calculate EST and LFT and find critical path

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