GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–III (OLD) EXAMINATION – WINTER 2017

Subject Code:132905   **Date:29/11/2017**

Subject Name: Basic Engineering in Textile

Time: 10:30 AM to 01:00 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 coal fired boiler? Explain the working of any one fire tube boiler with neat sketch.	**07**
	(b)	Explain humidification by air washer method with neat sketch.	**07**
Q.2	**(a)**	Explain importance of preventive maintenance vs. breakdown maintenance.	**07**
	(b)	A company produces 2 types of hats A and B. every hat A requires twice as much labor time as the second hat B. if company produces only hat B then it can produce a total of 500 hats per day. The market limits daily sales of hat A and B to 150 and 250 respectively. The profits on hat A and B Rs.8 and Rs. 5 respectively. Solve graphically to get the optimal solution of LPP.	**07**

OR

	(b)	1. Explain the basic procedure for work-study and its definition.	**07**
		2. Define work measurement technique.	
		3. Define standard time, normal time and definition of rating.	
Q.3	**(a)**	A company has four plants each of which can manufacture any one of four products. Product differ from one plant to another as follows:	**07**

Plant	Product			
	P	Q	R	S
1	33	40	43	32
2	45	28	30	23
3	42	29	35	29
4	27	42	45	38

Find out which product each plant should produce to minimize cost.

	(b)	Write short note on SIMO chart.	**07**

OR

1

Q.3 **(a)** Using Simplex method solve the LPP. **07**

Maximize $Z = 15X_1 + 6X_2 + 9X_3 + 2X_4$

Subject to, $2X_1 + X_2 + 5X_3 + 6X_4 \leq 20$

$3X_1 + X_2 + 3X_3 + 25X_4 \leq 24$

$7X_1 + X_4 \leq 70$

$X_1 \geq 0, X_2 \geq 0, X_3 \geq 0, X_4 \geq 0$

(b) How is the job selected for method study? **07**

Q.4 **(a)** Explain the various steps involved in time study. **07**

(b) Discuss the merits and demerits of water tube boiler and fire tube boiler. **07**

OR

Q.4 **(a)** A small project involves 7 activities, and their time estimates are listed in the following table. Activities are identified by their beginning and ending node number. **07**

Activity	Estimated Duration(Weeks)		
(i - j)	Optimistic	Most likely	Pessimistic
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

1. Draw the network Diagram of the activities in the project.
2. Find expected duration and variance for each activity. What is expected project length?
3. What is probability that project will be completed at least 4 weeks earlier than expected time?

(b) Explain any one feed water treatment method with neat sketch. **07**

Q.5 **(a)** Solve the following transportation problem starting with the initial solution obtained by VAM. **07**

	D_1	D_2	D_3	D_4	Supply

2

O_1	2	2	2	1	2
O_2	10	8	5	4	7
O_3	7	6	6	8	5
Demand	4	3	4	4	15

(b) 1. Explain humidification and dehumidification.   **07**

2. Define: RH, WBT, DPT.

OR

Q.5 **(a)** A project consist of a series of tasks labeled A, B……H, I with the following   **07**
constraints, A< D, E; B, D < F; C < G; B < H; F, G < I; W < X, Y means X and Y
cannot start until W is completed. You are required to construct a network
using this network using the notation. Also find the minimum time of
completion of the project when the time of completion of each task is given as
follows:

Task	A	B	C	D	E	F	G	H	I
Time(Days)	23	8	20	16	24	18	19	4	10

(b) Define and distinguish the earliest and the latest start time and the earliest   **07**
and the latest finish time. Explain optimistic time, pessimistic time, most likely
time in relation to PERT.

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