Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-III Remedial Examination March 2010

Subject code: 132905

Subject Name: BASIC ENGINEERING IN TEXTILE

Date: 11 /03 /2010 **Time: 03.00 pm-05.30pm**

Instructions:

Total Marks: 70

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

Q.1 **(a)** Draw flow chart of simplex algorithm. **07**

(b) 1. A company sells two different products A and B, making a profit of Rs.40 and Rs.30 per unit of them. The company produces with total capacity of 30,000 man-hours. It takes 3 hours to produce a unit of A and 1 hour for a unit of B. In market maximum number of units of A can be sold is 8,000 units and that of B is 12,000 units. Subject to these limitations, formulate this problem as a linear programming model to maximize the production of A and B. **04**

2. Evening shift workers of a textile mill works five consecutive days and have two consecutive days off. Their five days of work can start on any day of the week and the schedule rotates indefinitely. The mill requires the following minimum number of workers working. **03**

Sun	Mon	Tues.	Wed.	Thus.	Fri.	Sat.
35	55	60	50	60	50	45

No more than 40 workers can start their five working days on the same day. Formulate LPP to minimize the number of workers employed by the mill.

Q.2 **(a)** 1. Compare work sampling with time study. **02**

2. Define Standard time and Basic time. **02**

3. Describe the use of dummy operations in C.P.M. with any one example **03**

(b) 1. Define linear programming and explain structure of linear programming problem. **03**

2. Explain humidification by steam injection with neat sketch. **04**

OR

(b) 1. Compare C.P.M. and P.E.R.T methods of project planning. **03**

2. Define and distinguish the earliest and the latest start time and the earliest and the latest finish time. Explain optimistic time, pessimistic time, most likely time in relation to PERT. **04**

Q.3 **(a)** A project is represented by the following data **07**

Activity	Time(month)	Activity	Time(month)
1-2	2	4-6	3
1-3	2	5-8	1
1-4	1	6-9	5
2-5	4	7-8	4
3-6	8	8-9	3
3-7	5		

(b) Draw network diagram and Find the Critical path.

1. Give difference between Activity and Event of a project. **03**
2. Solve the following LPP by Graphical method. **04**

Min. Z = $3X_1 + 2X_2$

Subject to constraints :

$$3X_1 + 2X_2 \geq 10$$
$$X_1 + X_2 \geq 6$$
$$X_1 + 4X_2 \geq 12$$

OR

Q.3 **(a)** 1. Give the list of Work Measurement techniques. **02**

2. Define Standard time and Basic time. **02**

3. Explain steps for selection of worker for time study. **03**

(b) 1. Compare work sampling with time study. **03**

2. Explain humidification by steam injection with neat sketch. **04**

Q.4 **(a)** 1.Differentiate DBT (dry bulb temp) and WBT (wet bulb temperature) with application. **03**

2. What are the basic requirements of air conditioning system used in textile industry? **04**

(b) Explain Cochran boiler with neat sketch **07**

OR

Q.4 **(a)** Explain importance of preventive maintenance vs. breakdown maintenance. **07**

(b) 1. Write short note on PH value of water. **03**

2. List out the factors affecting economics of steam generation and distribution. **04**

Q.5 **(a)** Differentiate fire tube and water tube boilers. **07**

(b) A workshop has five mechanics with five jobs to be performed. The time (in hours) each man will take to perform each job is given as below: **07**

		Mechanics				
		I	II	III	IV	V
Jobs	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 assigned, one per worker, so as to minimize the total man-hours?

OR

Q.5 **(a)** Explain the distribution of different services like steam, water, compressed air etc., in textile industries with specific application of each in textile. **07**

(b) Use Vogel's Approximation Method to obtain an initial feasible solution of the given transportation problem. **07**

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	

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