

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER 3– EXAMINATION – WINTER 2014****Subject Code: 132905****Date: 18/12/ 2014****Subject Name: Basic Engineering In Textile****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) What do you mean by maintenance? What are the types of maintenance? Explain predictive maintenance in detail. **07**

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

Q.2 (a) What is performance rating and what are different rating methods? **07**

(b) Solve the following LPP by graphical method. **07**

$$\text{Minimize } Z = 20X_1 + 10X_2$$

$$\text{Subject to, } X_1 + 2X_2 \leq 40$$

$$3X_1 + X_2 \geq 30$$

$$4X_1 + 3X_2 \geq 60$$

$$X_1 \geq 0, X_2 \geq 0$$

OR

(b) Explain briefly the steps in work sampling study. **07**

Q.3 (a) Find the basic initial basic feasible solution for following transportation problem by VAM. **07**

	D ₁	D ₂	D ₃	D ₄	Availability
O ₁	11	13	17	14	250
O ₂	16	18	14	10	300
O ₃	21	24	13	10	400
Demand	200	225	275	250	

(b) Justify why method study proceed work measurement. **07**

OR

Q.3 (a) Vitamin C and Vitamin E are found in two different fruits F₁ and F₂. One unit of F₁ contains 3 units of vitamin C and 2 units of vitamin E. Similarly, one unit fruit F₂ of contain 2 units of vitamin C in it and 2 units of vitamin E in it. A patient needs minimum 30 units of vitamin C and 20 units of vitamin E. Also one unit of fruit F₁ costs Rs. 20 and one unit of fruit F₂ costs Rs. 25. The problem, the hospitals faces is to find such units of fruit F₁ and F₂, which should be supplied to the patient at minimum cost. Formulate LPP. **07**

(b) Explain need for air conditioning and humidification in textile industry. **07**

Q.4 (a) Give the application of any one recording technique in method study. **07**

(b) The following table gives the activity and duration of a construction project. **07**

Activity	1-2	1-3	2-3	2-4	3-4	4-5
Duration(Days)	20	25	10	12	6	10

Draw the network for the project and find critical path.

OR

- Q.4 (a)** Using the following cost matrix determine a) Optimal job Assignment b) The cost of Assignments. **07**

		Job				
Mechanic		J ₁	J ₂	J ₃	J ₄	J ₅
	A	10	3	3	2	8
	B	9	7	8	2	7
	C	7	5	6	2	4
	D	3	5	8	2	4
	E	9	10	9	6	10

- (b)** Define boiler. List essential parts of boiler. **07**
- Q.5 (a)** An assembly is to be made from two parts X and Y. Both parts must be turned on a lathe. Y must be polished whereas X need not to be polished. The sequence of activity, together with their predecessors, is given below. **07**

Activity	Description	Predecessor activity
A	Open Work order	----
B	Get material for X	A
C	Get material for Y	A
D	Turn X on lathe	B
E	Turn Y on lathe	B,C
F	Polish Y	E
G	Assemble X and Y	D,F
H	Pack	G

Draw network diagram of activities for the project.

- (b)** Define: CPM, PERT, total float, free float, independent float, activity, event. **07**
- OR**
- Q.5 (a)** Define: moist air, dry bulb temperature, wet bulb temperature, humidity ratio, absolute humidity, relative humidity, degree of saturation. **07**
- (b)** Explain humidification by steam injection with neat sketch. **07**
