Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III(New) EXAMINATION – SUMMER 2016

Subject Code:2132905 **Date:04/06/2016**

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.**

MARKS

Q.1 **Short Questions** **14**

1 Define surplus variables
2 Name the time study equipments
3 Which symbol is used for delay in method study?
4 Define externally fired boiler?
5 Define normal time
6 How to calculate standard normal variance in PERT
7 What is transportation problem?
8 What is relaxation allowance?
9 Define free float
10 Define dry bulb temperature
11 What is objective of assignment model
12 What is maintenance?
13 Define therbligs
14 Define basic variables

Q.2 **(a)** Explain natural circulation and forced circulation **03**

(b) Mention essential requirement of good boiler **04**

(c) Using graphical method solve the LPP **07**

Maximize $Z = 3X_1 + 2X_2$

Subject to, $X_1+2X_2 \leq 6$

$2X_1+X_2 \leq 8$

$-X_1+X_2 \leq 1$

$X_2 \leq 2$

$X_1 \geq 0, X_2 \geq 0$

OR

(c) Define briefly SIMO chart and state its applications. **07**

Q.3 **(a)** Why feed water treatment is necessary before supplying to the boiler **03**

(b) Explain various basic steps in PERT techniques **04**

(c) Determine the basic feasible solution of the following transportation problem by least cost entry method. **07**

Sources	D_1	D_2	D_3	D_4	Supply
S_1	2	3	11	7	6
S_2	1	0	6	1	1
S_3	5	8	15	9	10
Requirements	7	5	3	2	

Check optimality of the transportation problem.

OR

Q.3 **(a)** How does PERT provide for uncertainty in activity time **03**

estimates?

(b) Explain cooling with adiabatic humidification of air **04**

(c) Use simplex method to solve the LPP **07**

Maximize $Z = 4X_1 + 10X_2$

Subject to, $2X_1+X_2 \leq 50$

$2X_1+5X_2 \leq 100$

$2X_1+3X_2 \leq 90$

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

Q.4 (a) What are multiple activity charts? **03**

(b) Discuss in details with definition and suitable illustration man machine chart **04**

(c) Consider the following data for the activities of a project: **07**

Activity	A	B	C	D	E	F
Immediate predecessor	--	A	A	B,C	__	E
Duration (days)	2	3	4	6	2	8

Draw the network and find the critical path and various floats.

OR

Q.4 (a) What is importance of critical path in scheduling the projects **03**

(b) Explain the reason of incorporating dummy activities in a network diagram. **04**

(c) A company has a team of four salesmen and there are four districts where the company wants to start its business. After taking into account the capabilities of salesman and the nature of districts, the company estimates that profit per day in rupees for each salesman in each district is as follow: **07**

	1	2	3	4
A	16	10	14	11
B	14	11	15	15
C	15	15	13	12
D	13	12	14	15

Find the Assignment of sales man to various districts which will yield maximum profit

Q.5 (a) Which methods are used for getting initial solution of transportation problem **03**

(b) Explain preventive maintenance in detail **04**

(c) Explain with neat sketch the working Cochran boiler **07**

OR

Q.5 (a) Define work sampling. State its applications **03**

(b) How does work sampling differ from stop watch time study? Is the accuracy of the two methods are equal? **04**

(c) A small project is composed of 6 activities. Three estimates (in months) of all activities of a project are as given below: **07**

Activity	1-2	2-3	2-4	3-4	4-5	5-6
a	0.8	3.7	6.2	2.1	0.8	0.9
m	1.0	5.6	6.6	2.7	3.4	3.4
b	1.2	9.9	15.4	6.1	3.6	2.7

a) Find the expected duration and standard deviation of

each activity.

b) Construct the project network

c)Determine the critical path, expected project length and expected variance of project length

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