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RN-8145

B. E. - II (Sem. III) (T.T.) Examination

May / June – 2010

Basic Engg. in Textile

(As per GTU Syllabus)

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. - 2 (Sem. 3) (T.T.)**

Name of the Subject :

☛ **Basic Engg. in Textile**

☛ Subject Code No. : **8 1 4 5** ☛ Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Attempt **all** questions.
(3) Figures to the right indicate full marks.
(4) Use of calculators is permissible.
(5) Provide steam table and psychometric chart wherever necessary.

SECTION - I

1 (a) Answer the following questions : **10**

(i) "A multiple-activity chart is a quick and easy method of determining operator and machine utilization. True or False.

(ii) Explain the term : Optimistic and Pessimistic time.

(iii) Define feasible solution and optimal solution in connection with transportation model.

(iv) List the step to be followed in formulation of L.P.

(v) What does a critical path signify in network analysis?

(vi) List the various symbols used in process charts with its description.

(vii) List the various time study equipments.

(viii) State the importance of P.E.R.T. in network analysis.

(ix) List the various methods to solve linear programming and state which method is the universally adopted method to solve linear programming.

(x) Which two methods are used to check the optimality of transportation problem?

(b) Answer the following questions : **10**

(i) Define "method study". Explain in detail the various steps involved in systematic method of improvement.

(ii) What do you understand by "Work Measurement"? What is its relationship with Method study?

2 (a) Define Float. Explain its different types and their importance.. **12**

(b) A project is composed of following activities :

Activity	1-2	1-3	1-4	2-5	3-5	4-6	5-6
t_o	12	3	12	1	2	4	5
t_m	15	4	22	1	5	5	6
t_p	17	7	28	1	14	8	10

For this draw the network and find the critical path.

OR

2 (a) The activity duration for a project are given below. Draw the network and identify the critical path. Duration of activities are in days : **12**

Activity	Duration	Activity	Duration
10 – 20	7	30 – 60	10
10 – 30	10	40 – 60	7
20 – 30	4	50 – 70	10
20 – 40	5	60 – 70	8
30 – 40	6	60 – 80	12
30 – 50	11	70 – 80	10

(b) Consider a project for which the following activities and time estimates in weeks are given :

Activities	1–2	1–3	1–5	2–3	2–6	3–4	3–5	4–5	5–6
t_o	3	2	2	1	7	1	2	1	1
t_m	5	3	3	2	8	3	4	2	2
t_p	8	5	4	5	9	6	6	4	3

For this :

(i) Draw the network.

(ii) Compute expected time and variance for each activity.

(iii) Find the length of critical path and project duration.

3 Attempt any **three** : **18**

(a) A farmer has 1000 acres of land on which he can grow corn, wheat or soya bean, each acre of corn costs Rs. 100 for preparation, requires 7 man days of work and yield a profit of Rs. 30. An acre of wheat cost Rs. 120 to prepare, requires 10 man days of work and yield a profit of Rs. 40. An acre of soyabean cost Rs. 70 to prepare, requires 8 man days of work and yield a profit of Rs. 20. If the farmer had Rs. 100,000 for preparation and count on 8000 man days of work. How many acre should be allocated to each crop to maximize profits ?

(b) Determine an initial basic feasible solution to the following transportation problem using row minima method.

		To			Availability
	5	2	4	3	22
From	4	8	1	6	15
	4	6	7	5	8
Demand	7	12	17	9	

(c) Solve the following assignment problem :

	I	*II*	*III*	*IV*	*V*
1	11	17	8	16	20
2	9	7	12	6	15
3	13	16	15	12	16
4	21	24	17	28	26
5	14	10	12	11	13

(d) Explain the assumption in the transportation model.

(e) Write and explain at least five application areas of Linear Programming.

SECTION - II

1 (a) Answer the following : **10**

(i) What is raw water?

(ii) 20 parts per million is _____ percentage.

(iii) The process of removing dissolved matter in the form of positive and negative ions from preheated water is called_____.

(iv) What is process heating?

(v) What is the difference between dug air and atmospheric air?

(vi) How does the human body respond to cold weather ?

(vii) What is corrective/breakdown maintenance?

(viii) What do you mean by Plant Maintenance?

(ix) Outline the various types of maintenance.

(x) State the various functions of maintenance.

(b) Answer the following : **10**

(i) Explain the working of pressure jet with the help of neat sketch.

(ii) Write a short note on Deaeration.

2 (a) Distinguish between fine tube boiler and water tube boiler. State the advantages of water-tube ore fine tube boiler. **12**

(b) A 5m × 5m × 2m room contains air at 25°C and 100 kPa at a relative humidity of 75 per cent. Determine : (a) the partial pressure at dry air (b) the specific humidity (c) the enthalpy per unit mass at the dry air, (d) the masses at the dry air and water vapour in the room.

OR

2 (a) What is corrosion? Explain the importance of pH value to control the corrosion phenomenon. **12**

(b) Air enters an evaporative cooler at 1 atm, 35°C and 20 percent relative humidity and it exits at 80 per cent relative humidity. Determine : (a) the exit temperature at the air and (b) the lowest temp. to which the air can be cooled by this evaporative cooler.

3 Attempt any **three** : **18**

(i) State drawbacks and advantages of packaged type of boiler.

(ii) What are the major impurities of make-up water ?

(iii) Define the following :

(a) Moist air (b) Dew point temperature

(c) Saturated air.

(iv) State the objective and advantages of Preventive maintenance.

(v) "Prevention is better than cure" is the underlying principle in preventive maintenance. Justify the statement.