

[This question paper contains 5 printed pages.]

Your Roll No.....

3324

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B.Tech. (C)/IV

**Paper ECE-401—CONSTRUCTION TECHNOLOGY,
MANAGEMENT AND SPECIFICATION**

Time : 3 Hours

Maximum Marks : 70

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

Answer any five questions.

Draw net sketch wherever required.

Statistical tables may be used.

1. (a) Explain the principle of working of dragline. Write also their applications and limitations. 7
- (b) What is the purpose of dewatering? Briefly discuss various methods of dewatering. 7
2. (a) Discuss the factors which affect the selection of equipment in a project. 7
- (b) Determine the expected completion time, variance and standard deviation of the project having 8 activities as given below :

Activity	A	B	C	D	E	F	G	H
Predecessor	—	A	—	—	D	C	B, C	E, C
Optimistic time	1	2	3	2	2	2	2	3
Most Likely Time	4	5	6	2	3	4	9	3
Pessimistic Time	7	8	9	2	7	6	10	3

3. (a) Briefly describe the organisation of Public works Department. 7
- (b) What is the need of specification? Write general specifications for a first class building. 7
4. (a) A construction project involves activities as follows:

Activity	A	B	C	D	E	F	G	H	I	J
Predecessor	—	A	A	A	B	C	C	E, F	D, G	H, I
Duration (in months)	12	8	4	3	12	18	5	4	9	6

- (i) Draw network diagram for the project.
- (ii) Find the critical path and project completion time.
- (iii) Will the critical path change if the activity F takes 15 months instead of 18 months? If yes, what will be the new critically path? 7
- (b) Discuss the advantages and disadvantages of mechanisation in a project. 7
5. (a) Write merits and demerits of steel form work and wooden form work in a building project. 7
- (b) What is the purpose of scaffolding? Draw a typical diagram of mason scaffolding. 7
6. (a) A production manager wants to determine the quantity to be produced per month of products A

and B manufactured by his firm. The data on resources required, availability of resources and the contribution from sale of each product are available and is given below :

	Requirements for		Capacity available per month
	Product A	Product B	
Raw material (kg)	60	120	12000
Machining (hr per piece)	8	5	600
Assembly (Man-hours)	3	4	500

Find the number of pieces of A and B to maximise the profit if it is Rs. 20 for A and Rs. 30 for B per piece.

7

- (b) A construction company moves material from three plants X, Y and Z to four project sites A, B, C and D. The requirement of material at the sites and the capacities of plants in terms of truck loads are given in the following table. Transportation cost (in hundred Rs.) per truck load from each plant to every site is also given :

[P. T. O.]

Plants \downarrow Sites \rightarrow	A	B	C	D	Capacity
X	9	12	9	6	70
Y	7	3	7	7	60
Z	6	5	9	11	90
Requirement	70	50	70	30	

Using Vogel's Method find the basic solution and optimal transportation cost. 7

7. (a) Calculate the cost of operating a truck for the following data :

- (i) Cost of Truck = Rs. 12,00,000
- (ii) Salvage value = 10% of the cost
- (iii) Life of Truck = 10 years
- (iv) Repair and Maintenance Cost = Rs. 30,000 per year but increasing by 10% every year.
- (v) Cost of Fuel = Rs. 40 per litre
- (vi) Running of Truck = 6 km per litre
- (vii) Average annual running of Truck = 16,000 km.
- (viii) Road Tax = Rs. 30,000 per year
- (ix) Interest Rate = 8% per annum. 7

- (b) Define contract. Write the objective of the contract. Also discuss the essentials of a valid contract. 7

8. Write short notes on any *four* of the following :

(i) Usage of Bar Chart and Mile Stone Chart

(ii) Fulberson Rule

(iii) Break-Even Point Analysis

(iv) Span of Management

(v) Types of Management

(vi) Different Time Estimates.

$$3\frac{1}{2} \times 4$$