

FACULTY OF ENGINEERING**B.E. 4/4 (Civil) II – Semester (Old) Examination, April / May 2014****Subject: Construction Management and Administration****Time: 3 Hours****Max.Marks: 75****Note: Answer all questions from Part A. Answer any five questions from Part B.****PART – A**

- 1 Explain the term organization and enlist various functions of an organization? (3)
- 2 Draw the WBS of any flyover construction project. (3)
- 3 State the basic rules for drawing CPM network. (3)
- 4 Define slope of direct cost curve clearly. (3)
- 5 What are the contents of a contract document? (3)
- 6 Explain the term "Time - cost trade off". (2)
- 7 Why LP models are called deterministic in nature? (2)
- 8 State major characteristics of scientific management. (2)
- 9 Distinguish between Surplus and Artificial variable. (2)
- 10 Name three basic parts of simplex techniques. (2)

PART – B

- 11 What are the functions of construction management? Discuss briefly the "Matrix Organizational Form" with the help of a neat sketch. Give its relative merits and demerits. (3+4+3)
- 12 A project consists of seven activities and the time estimates of the activities are furnished as under: (3 + 3 + 2 + 2)

Activity	Optimistic (Days)	Most likely (Days)	Pessimistic (Days)
1 - 2	4	10	16
1 - 3	3	6	9
1 - 4	4	7	16
2 - 5	5	5	5
3 - 5	8	11	32
4 - 6	4	10	16
5 - 6	2	5	8

- a) Draw the network diagram.
- b) Identify the critical path and its duration
- c) What is the probability that project will be completed in 5 days earlier than the critical path duration?
- d) What project duration will provide 95% confidence level of completion? ($Z_{0.95} = 1.65$)

Given:

Z →	1.00	1.09	1.18	1.25	1.33
Probability	0.1587	0.1379	0.1190	0.1056	0.0918

- 13 a) What is meant by updating? Write briefly a note on updating of construction project. (4)
- b) Write down the procedural steps used for calculating time cost optimization. (6)
- 14 Explain with an example the linear programming problem in its general form with matrix notation. (5 + 5)
- 15 Solve graphically the following LP problem: (10)

Maximize $Z = 30x_1 + 20x_2$

Subject to constraints:

 - $x_1 - x_2 \geq - 8$
 - $6x_1 - 4x_2 \leq - 12$
 - $5x_1 + 8x_2 = 20$
 - $x_1, x_2 \geq 0$
- 16 (a) What are the broad classification levels and significance of Work Breakdown Structure? (4)
- (b) Show a Work Breakdown Structure of a Primary Health Centre with five bed ward facility. (6)
- 17 Write short notes on any TWO of the following: (5 + 5)
 - a) Principles of organization
 - b) Demolition of buildings
 - c) Tender analysis
 - d) Large scale production

FACULTY OF ENGINEERING
B.E. 4/4 (Civil) II-Semester (New) (Main) Examination, April / May 2014

Subject : Construction Management and Administration

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

- 1 What are the functions of Construction Management? (2)
- 2 What is the role of Construction Management team? (2)
- 3 What are the advantages of Large Scale Production? (2)
- 4 What is the difference between CPM and PERT? (2)
- 5 Differentiate between direct cost and total cost. (2)
- 6 What is the role of slope in networks? (3)
- 7 What are the advantages of cost plus contracts? (3)
- 8 What are negotiated contracts? (3)
- 9 Mention the importance of Pivot element. (3)
- 10 Why the non negativity condition exists in LP model? (3)

PART – B (50 Marks)

- 11 (a) Enumerate the objectives of construction management in civil engineering.
 (b) What are the merits and demerits of Line and Staff organization?
- 12 (a) What are the advantages and disadvantages of bar charts?
 (b) Mention the disadvantages of large scale production.
- 13 (a) Prepare a bar chart for the following activity relationship

(i) A, B and C are initial activities	(ii) Q, M and R are finishing activities
(iii) H precedes N but follows D	(iv) E follows D but precedes N
(v) F and L follow K and B	(vi) F precedes M
(vii) Q follows P, L and N	(viii) L precedes R but follows C
(ix) D follows G	(x) K and D follow A
(xi) F precedes P but follows G	
- (b) Mention the three time estimates of an activity and discuss about each one of them.
- 14 Determine the optimum cost and duration for the project network. The data for each activity of network are given in the following table. Indirect cost is Rs. 4000/- per week.

Activity	Normal		Crash	
	Normal Time	Cost (Rs.)	Crash Time (Weeks)	Cost (Rs.)
1 - 2	4	600	3	800
1 - 3	2	400	2	400
1 - 4	5	750	4	900
2 - 3	7	400	5	600
2 - 5	7	800	6	1000
3 - 5	2	500	1	650
4 - 5	5	600	4	850

- (a) Draw the network of the project.
- (b) Find the normal duration and cost of the project
- (c) Find the optimum duration and cost of the project
- 15 (a) Mention the different measures to be adopted to reduce accidents in the Construction Industry.
 (b) Enumerate the advantages of Public Private Partnership (PPP) method for executing projects in Construction Industry.
- 16 Optimize the following linear programming model.
 Maximise $Z = 6x_1 + 4x_2 + 3x_3$
 Subject to constraints $4x_1 + 5x_2 + 3x_3 \geq 40$
 $2x_1 + x_2 + 6x_3 \geq 50$
 $3x_1 + 4x_2 + 2x_3 \geq 60$
 and $x_1, x_2, x_3 \geq 0$
- 17 Write short notes on any two of the following:
 (a) BOT (b) Contract Labor Act (c) Principles of Organization