

THE OPEN UNIVERSITY OF SRI LANKA
 DEPARTMENT OF CIVIL ENGINEERING
 CONSTRUCTION MANAGEMENT PROGRAMME - LEVEL 7
 POST GRADUATE DIPLOMA / STAND ALONE COURSES



Final Examination – 2009

CEX7101 - Planning and Control in the Construction Industry

Time Allowed: Three Hours

Date: 2nd March 2010

Time: 0930-1230 hrs.

Section A and Section B consist of three questions each.

Select two (2) questions from each section and answer a total of four (04) questions.

Section A

Q1.

- (a) What constitute the construction sector? Why is it important in the national economy? (10 marks)
- (b) What steps can be taken to stabilize fluctuations in demand for construction? (08 marks)
- (c) Explain how a government can use the construction sector as an effective economic regulator. (07 marks)

Q2.

- (a) A method of survival for a contractor is through 'Tactical Planning'. Discuss two possible survival tactics a contractor can resort to. (10 marks)
- (b) The choice of 'planning technique' to be used for a project will depend on many factors. Name three major factors affecting the choice of planning technique.

A contract was awarded for the construction of a large hydro-power project which involves the construction of a dam, a power house, an office complex and a road network with many culverts and bridges. Discuss how planning techniques can be selected for items in this project, based on the three factors given by you. (10 marks)

- (c) Explain the 'Milestone Completion' method of planning, using a suitable construction example. (05 marks)

Q3.

- (a) If the planning methodology in the construction sector is to be improved it is important to prepare an inventory of the construction sector. Discuss the factors to be addressed in this regard. (08 marks)
- (b) Following the aftermath of the war it is expected that a large volume of infra-structure work will be undertaken in the North. Explain the steps that Clients, Consultants and Contractors can take in order to minimize the cost of construction and to encourage local participation. (12 marks)
- (c) What do you understand by 'forward linkages' to the construction industry? (05 marks)

Section B**Q4.**

Given below are the activities for a building construction project.

Table 4.1

Activity	Description	Duration (days)	Preceding activity
A	Foundation	6	-
B	Frame & Roof	7	A
C	Brickwork including window frame	8	B
D	Door frame	2	B
E	Plumbing & wiring	5	C
F	Plastering	6	E
G	Door & window panels	4	C,D
H	Flooring	3	C,D
I	Finishing & Plastering	7	F,G,H
J	Landscaping	3	I

- (a) Draw the activity-on-arrow diagram and the activity-on-node diagram for completion of the project. (10 marks)
- (b) Indicate the critical path in both types of network diagrams. Explain the importance of the critical path for the successful completion of projects. (08 marks)
- (c) What do you understand by the phrase "Work programmes need to be well conceived"? (07 marks)

Q5.

- (a) Explain how you can exercise Progress Control on a project where the work programme is based on the critical path method. (08 marks)
- (b) Table 5.1 (on page 4) shows a Bar Chart for the construction of a road in a Mahaweli Township. Assuming that the rate of work done is uniform prepare a 'Value Curve' with the horizontal axis representing 'Time' and the vertical axis representing the 'Value of Work'. (07 marks)
- (c) At the end of the third month, the progress of the activities which had commenced are as given in Table 5.2 below.

Table 5.2

Activity	Percentage Completion
Preliminaries	100
Clearing of road trace	100
Embankment	75
Common Excavation	70
Rock Excavation	0
Sub base	5

Plot the position in the 'Value Curve', comment on the progress made by the contractor, and discuss.

(10 marks)

Q6.

Write short notes on any four of the following:

- (a) The significance of 'Employment' and 'Underemployment' in the construction industry
- (b) The importance of developing the domestic building materials industry
- (c) Why 'planning' is important for construction projects
- (d) Use of innovative approaches in the preparation of work programmes
- (e) Use of the Line-of-Balance schedule for planning

(6.25 marks each= 25 marks)

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Table 5.1

MAHAWEI AREA ROAD DEVELOPMENT PROJECT - CONSTRUCTION PROGRAMME

ACTIVITY	DURATION (MONTHS)	QTY	VALUE OF WORK (Rs. M)	1981												1982				
				JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN					
1- PRELIMINARIES	3		0.9																	
2- ROAD CONSTRUCTION CLEARING	4	25 km	1																	
3- EARTH WORK - EMBANKMENT	11	931000m ³	26.4																	
		35000m ³	7.7																	
4- COMMON EXCAVATION	11	343 000m ³	7.7																	
5- ROCK EXCAVATION	3	7000m ³	1.2																	
6- SUB BASE	6	102000 m ³	7.2																	
7- BASE COURSE	6	60000 m ³	24																	
8- BITUMEN SURFACING	4	267000 m ³	5.0																	
9- SHOULDER MATERIAL PLACING	7	10450 m ³	0.7																	
10- TURFING	12	275000 m ³	3.6																	
11- BRIDGES	12		24.0																	
12- CULVERTS	12		4.8																	

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