

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



**011**

**Final Examination - 2005**

**CEX 7101, CEP 2101/CEE 7101 - Planning and Control in the Construction Industry**

**Time Allowed: Three Hours**

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Date: 11<sup>th</sup> March 2006

Time: 0930-1230 hrs.

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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)

The construction industry spans across many sub sectors of construction activities. Identify and briefly outline ten (10) such broad categories discussing their significance in the country's economy.

(10 marks)

(b)

Discuss the essential matters that need consideration in formulating a policy for the Construction Industry of Sri Lanka.

(15 marks)

**Q2.**

(a)

Discuss by citing suitable examples, how the following strategies will help in the survival and development of domestic construction contractors.

- (i) Simplification and diversification of activities
- (ii) Using tactical planning for survival
- (iii) Using a Multiple-Contracts approach

(15 marks)

(b)

The construction sector is used in many countries as an economic regulator. Has Sri Lanka done the same in the recent past? Discuss.

(10 marks)

Q3.

(a) 'Expansion of output' and 'employment' in the construction sector of developing countries is often not possible due to problems with respect to 'supply of resources'. Discuss the problems. (15 marks)

(b) When an engineer is designing capital works for a developing country, he should "Produce a simple design which makes the best use of local materials and abundant cheap labour". Discuss the advantages and disadvantages of resorting to this method. (10 marks)

**SECTION B**

Q4.

Explain the function of a network diagram and list its major advantages over a Bar Chart. (06 marks)

The Table 1 below gives the activities and their interactions, together with their durations in days, for a project to install a pump set for pumping water.

Table 1.

Event No.	Description	Activity	Duration in Days	Preceded by	Followed by
1.	Selection of the pump set	A	3	-	B
2.	Obtaining quotations	B	7	A	C
3.	Purchasing the pump set	C	2	B	F
4.	Laying the mat for pump foundation	D	4	A	E
5.	Construction of the foundation block	E	7	D	F
6.	Fixing the pump set on foundation	F	2	E,C	G
7.	Installation of pipelines	G	4	F	I
8.	Completing electric lines	H	2	C	I
9.	Providing electric connections & commissioning the pump	I	1	H,G	None

(a) Draw an activity-on-arrow diagram and show the critical path (05 marks)

- (b) Draw a table with Early start time, Late start time and Start floats for all activities (06 marks)
- (c) Draw an activity-on-node diagram for the same project and discuss the advantages of this diagram over the previous one. (08 marks)

**Q5.**

- (a) Discuss the Progress Control of construction projects in relation to the following techniques used for preparing Work Programmes. Use relevant diagrams for clarity.
- (i) Bar charts
  - (ii) Critical Path Methods & Line of Balance technique
- (10 marks)
- (b) Describe the Value Curve method for Progress Control. Use an example from the road construction industry to indicate how the planned & actual values for work can be calculated each month. State all assumptions made. (15 marks)

**Q6.**

A proposed hotel project involves the following broad items of work.

- (i) Construction of the main building including lounge & restaurant/bar.
- (ii) Kitchen apartment & dining area
- (iii) Construction of 40 numbers of two bed roomed units spread out over an area of two acres.
- (iv) Sports complex
- (v) Swimming pool
- (vi) Car park
- (vii) Boiler room
- (viii) Laundry
- (ix) Transformer sub station
- (x) Engine room

It is required to complete the work in 24 months.

- (a) Explain how you decide on the work methodology for the entire project. Prepare a work break down structure based on the methodology you hope to adopt in executing the different parts of the project giving reasons to justify the structure adopted. (10 marks)
- (b) Making reasonable assumptions, prepare a milestone network indicating time targets. (05 marks)
- (c) The two bed roomed units also include one attached toilet and open verandah. Prepare a set of activities along with the resources, for the construction of a complete unit. Draw a logic relationship for the set of activities. (10 marks)