

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



**Final Examination – 2010**

**CEX7101 - Planning and Control in the Construction Industry**

Time Allowed: Three Hours

Date: 01<sup>st</sup> March 2011

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) Provide a brief overview of the present structure of the construction industry in Sri Lanka (10 marks)
- (b) Outline in brief the basic conclusions of the ILO study on Employment in the Construction Industry (10 marks)
- (c) Briefly describe the 'forward' and 'backward' linkages of the construction industry (05 marks)

**Q2.**

- (a) Explain the conflict faced by a contractor in attempting to control time, cost and quality. (10 marks)
- (b) Describe a system a contractor could adopt in order to measure performance and hence progress of construction activities on a regular and frequent basis, highlighting any implementation problems. (15 marks)

**Q3.**

- (a) Describe in detail the types of information and data a contractor will need at each stage, to be able to plan a construction project effectively. (15 marks)
- (b) Explain how the Client the Consultant and the Contractor needs to work hand-in-hand in creating a healthy construction industry. (10 marks)

## Section B

## Q4.

The Table below gives a schedule of activities for a concreting process.

Table 4.1

Activity	Description	Duration (weeks)	Resources (men)
1-2	Excavate foundations and basement-stage 1	2	2
2-3	Excavate foundations and basement-stage 2	6	4
2-4	Concrete foundations-stage 1	3	3
3-5	Water proof lining to basement	6	3
3-4	Break out old sub-structure	1	1
4-5	Concrete foundations-stage 2	3	3
5-6	Concrete basement walls	2	2

- (i) Draw a complete activity-on-arrow network showing durations, event numbers and event times and an activity-on-node network. (08 marks)
- (ii) Indicate the critical path on both diagrams and calculate the total floats of activities. (04 marks)
- (iii) Draw a bar chart based on the earliest start times and the latest start times. (05 marks)
- (iv) Prepare a resource aggregation chart for resources (men) based on the earliest start order. Discuss how resources can be smoothened.

(08 marks)

## Q5.

A client requires a hotel to be constructed overlooking the sea at Hambantota. The land area is 20 hectare. The nearest village is 3 km away and has electricity and telephone facilities. There is no urban water supply in the vicinity of the construction site. The project involves the construction of the following.

- (i) Main multi storey hotel complex consisting of 100 rooms
- (ii) A large hall with inbuilt seating and audio/video facilities for relaxing
- (iii) A well ventilated large dining hall
- (iv) A spacious kitchen with appropriate fittings
- (v) Laundry
- (vi) Water supply scheme
- (vii) Generator house
- (viii) Cold storage room
- (ix) Indoor & outdoor games facilities
- (x) Garden landscaped and well laid out for walking
- (xi) Sea beach space with appropriate facilities
- (xii) Car park

Air conditioning and telephone facilities are to be made available in all rooms. The garden is to be landscaped and the approach road from the main road is to be constructed initially. The village can supply the unskilled labour and also good quality timber.

Making suitable assumptions regarding the other resources required,

- (a) Identify a methodology you hope to adopt in executing this project at the pre-contract stage. Prepare a work breakdown structure at **macro level** based on this methodology. Discuss and identify the planning techniques suitable for each stage in your work breakdown structure. (15 marks)
- (b) How would you organize the resources; materials, labour and machinery for the entire project period? Approximate estimates of quantities may be assumed. (10 marks)

You are required to give your reasons for each decision you make.  
Make reasonable assumptions where necessary.

Q6.

Write short notes on any four of the following:

- (a) Desirability of using Critical Path Method (CPM) for construction planning over Programme Evaluation & Review Technique (PERT)
- (b) Discuss the advantages of using sub-nets in network construction
- (c) Discuss the factors which affect the choice of 'planning technique' for a multi storey building construction project giving the particular advantages of selected techniques
- (d) The economic approach to design problem solving in 'design costing & management' for a building project.
- (e) Use of innovative approaches in the preparation of work programmes

(6.25 marks each= 25 marks)