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

**Final Examination – 2013/14**

CEX7101 - Planning and Control in the Construction Industry

Time Allowed: Three Hours

Date: 5th August 2014 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) Discuss the contribution of the Construction Industry to the national economy of Sri Lanka over the last five years. (10 marks)

(b) Explain why contractors need to resort to survival methods and discuss three such methods of survival explaining their advantages & disadvantages. (15 marks)

**Q2.**

(a) Discuss the important planning functions to be considered by the Clients during the appraisal and design stage of a construction project. (10 marks)

(b) Discuss the advantages of using sub-nets in network construction. Illustrate your answer with an example from a road construction project. ( 05 marks)

(c) Explain the difference between 'resource allocation' and 'resource aggregation'. Why is it necessary to prepare a set of decision rules for the purpose of allocating resources? (10 marks)

**Q3.**

(a) Outline the different types of planning techniques and discuss the specific advantage of using the Line of Balance technique for repetitive projects. (09 marks)

(b) Labour-intensive public works offer a number of potential advantages to developing countries. Discuss in detail indicating the disadvantages as well. (08 marks)

(c) There are significant forward and backward linkages connected to the construction industry. Discuss the effect of these linkages on the economy. (08 marks)

**Section B**

**Q4.**

(a) A network consists of the following activities with indicated duration in weeks.

Table 1

| Activity | Duration (weeks) | Preceded by |
|---|---|---|
| A | 3 | - |
| B | 2 | A |
| C (completion) | 4 | D |
| D | 2 | E |
| E | 5 | A |
| F(completion) | 1 | B |
| G | 2 | B |
| H(completion) | 3 | E,G |

(i) Draw an activity-on-arrow network diagram for the set of activities. Identify the critical path and determine the project completion time. (08 marks)

(ii) Draw a suitable activity-on-node network diagram for the project indicating activity times, sequence of activities and the critical path. (06 marks)

(iii)Prepare a bar chart based on 'Earliest Event Times' indicating the Latest Event Times and the floats of activities on the same chart. (06 marks)

(b)Compare the use of bar charts and network diagrams for construction projects. (05 marks)

**Q5.**

A client requires a hotel to be constructed. The project involves the construction of the following.

(i) Main multi storey hotel complex consisting of 100 rooms
(ii) Main hall 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) Garden landscaped and well laid out for walking
(x) Car park

(a)
Prepare a work breakdown structure at **macro level** based on a methodology you hope to adopt in executing this project at the pre-contract stage. (10 marks)

(b)
Discuss and identify the planning techniques suitable for each stage in your work breakdown structure.

(15 marks)

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

**Q6.**

Write short notes on the following:

(a) Desirability of using Critical Path Method (CPM) for construction planning over Programme Evaluation & Review Technique (PERT)

(b) The main processes in the construction industry

(c) 'Economically Active' population of a country

(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

(5*5=25 marks)