

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



Final Examination - 2011

CEX 7108- Cost Control and Cash Flow in the Construction Industry

Time Allowed : Three Hours

Date: 08th March 2012

Time : 0930-1230 hrs.

This paper consists of six questions.

Answer Q1 and any three (3) questions from **Section B** and hence answer a **total of four (4)** questions.

Q1 in Section A which is compulsory, carries 40 marks.

You are advised to spend about one hour on this question. Graph sheets will be provided.

SECTION A - Compulsory (40 marks)

Q1.

A company has won a contract for the construction of a two span bridge. One span is of in-situ reinforced concrete, while the other span is of pre-cast concrete. The activities are to be carried out as given in the table 1.1.

The Contract sum is Rs.94 M and the Contractor will receive payment from the Client as indicated.

Table 1.1

Activity No	Activity name	Description	Duration (months)	Preceding activity	Payment Rs.M
1	A	Pile & cap east	1	-	10.0
2	B	Pile & cap west	1	-	10.0
3	C	Pile & cap centre	0.5	-	15.0
4	D	Substructure east	1.5	A	6.0
5	E	Substructure west	1.5	B	6.0
6	F	Substructure centre	1	C	10.0
7	G	Construct in-situ span	2	D,F	20.0
8	H	Construct pre-cast span	0.5	E,F	10.0
9	I	Surfacing of bridge	0.5	G,H	5.0
10	J	Finishes	1	I	2.0

All items carry a profit margin of 10% of value.

Retention is 10% of the interim bill value up-to a maximum of 5% of Contract Sum. Half the retention will be released on practical completion and the balance after the Maintenance Period.

An Advance Payment of 20% of the Initial Contract Price will be received by the Contractor at the start of work. The advance payment shall be recovered in four equal installments starting from the second month onwards.

Contractor is paid monthly according to the percentage of completion of each activity, with a payment delay of 1 month.

All Cost liabilities are assumed to be met without any payment delay.

- (i) Draw a bar chart based on the earliest start times. (06 marks)
- (ii) Prepare expected cumulative cash flow for the project. (24 marks)
- (iii) Does the project require any financing? If so indicate the amount and time of requirement. (04 marks)
- (iv) If a credit facility of one month is given for all costs indicate how it will affect the cashflow. (06 marks)

SECTION B – consists of five (05) questions. **Answer any three (03) questions**

Q2.

- (a) Discuss how the following factors are to be considered in converting a final cost estimate for a project into a 'project budget' compatible with an organisation's cost accounts.
 - (i) Treatment of Contingency amounts
 - (ii) Treatment of Inflation

(08 marks)
- (b) Discuss how you will design a monitoring system for a construction project. (12 marks)

Q3.

- (a) Explain in detail the data collection methods for controlling Performance, Cost and Time of construction projects. (12 marks)
- (b) When calculating variances of a road construction project at the end of six months, it is found that there is an adverse variance for the item 'construction plant'. Identify possible reasons and discuss remedial measures for the future. (08 marks)

Q4.

(a) Outline the concept of "Cash flow Forecasting" and its role in "Cost Control" in the construction of buildings. (10 marks)

(b) Explain the importance of the Design Brief, with reference to Cost Control of a Multi-storey housing complex to be constructed in the city of Colombo. (10 marks)

Q5.

(a) Explain how 'Claims' affect a Contractor's cash flow. Discuss why it is important to separate out 'Claims' when assessing the achieved margin in a construction contract. (10 marks)

(b) Draw the cash curves giving information most useful to a Client/Owner and explain his interpretation. (10 marks)

Q6.

(a) Explain why certain civil engineering contractors in Sri Lanka are still reluctant to perform cost monitoring of projects. Discuss possible steps to be taken to make them understand the importance of "Cash flow Forecasting" and "Cost Control". (12 marks)

(b) A Client requires a 20 bed roomed, three-star hotel to be designed & constructed in close proximity to the sea coast. As the Consultant for this project, list the steps you would take to minimize the overall cost of this project by making use of the Value Engineering concept at the design stage. (08 marks)