

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



Final Examination - 2010

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

Time Allowed : Three Hours

Date: 04th April 2011

Time : 1400-1700 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 is compulsory, and 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.

It is proposed to construct a railway line from Matara to Kataragama. The details of the project are given in the table below.

Contract Value- Rs 400 Million

Time for completion- 06 months

Mark up- 10%

Retention- 10%

Release of retention- 50% on completion and balance after 6 months

Mobilisation Advance- 15%

Advance Recovery- 20% of Cum Value starting from second payment onwards

Bill Payments- monthly with one month payment delay

Average Credit Facility- one month

Cumulative Value Vs Time data to be calculated from the following production data.

Table 1.1

Time (month)	Cumulative Value (% of Contract Value)
1	30%
2	45%
3	60%
4	75%
5	90%
6	100%

- (a) (i) Prepare a Cash-Flow forecast
 (ii) Draw 'CASH-IN' and 'CASH-OUT' graphs
 (iii) Draw the cash flow graph and indicate the negative cash flow areas

You may make relevant assumptions where necessary.

(30 marks)

Using the above graphs:

- (b) Obtain the maximum amount of external finance required to complete this project & the time when this finance is required. (05 marks)
- (c) Discuss the possible 'claims' issues for the above project and their likely effect on the cash flow. (05 marks)

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

Q2.

As the assistant to the Project Manager you are to improve the effectiveness of 'Cost Control' on a road construction project. The initial cash flow forecast is available.

- (a) Explain how you will design a good cost control system for the project. (12 marks)
- (b) Discuss the practical problems in cost monitoring for the above project. (08 marks)

Q3.

(a) Contractors do cash flow forecasting at the 'Estimating and Tendering' stage of a project and at 'Company Level'.

Describe the significance of each type of forecast for a construction company.

(12 marks)

(b) When calculating variances at the end of six months on a building construction project, 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) Discuss the significance of 'Performance Ratios' in measuring a project's performance with regard to **time, cost and production**.

(10 marks)

(b) Many Civil Engineering Contractors have been declared bankrupt although they have reported profit on their business operations. Explain how this can be possible.

(10 marks)

Q5.

The Contract value for the construction of a house is Rs.22.51 million and the contract period is 06 months. The contractor's estimate for this project (budget) is shown in the Table 5.1 below.

Table 5.1- Project budget for a building (Rs.'000)

Activity	Labour category	Labour cost	Plant cost	Material cost	Site overhead	Head office overhead	Profit	Total value
Excavation of foundations	1	300	200	-	150	150	200	1000
Work upto DPC	2	420	-	1,200	200	200	300	2320
Fabricate door & window frames	3	860	300	3,500	340	340	400	5740
Brickwork above DPC	2	560	-	2,200	260	260	300	3580
Electrical & plumbing	4	800	230	2,000	220	220	260	3730
Finishes	2	660	400	4,000	340	340	400	6140
		3600	1130	12,900	1510	1510	1860	22510

At the end of month 03 a progress check shows the following completion of activities.

Excavation & Work upto DPC are 100% complete.
 Fabricate doors & windows - 80% complete
 Brickwork above DPC - 60% complete
 Electrical & plumbing - 00%
 Finishes - 00%

Cost allocation at the end of month 03 is shown in Table 5.2 below.

Table 5.2 - Actual Costs (Rs.'000) upto end of month 03

Labour category				Plant	Materials	Site overheads
1	2	3	4	500	6,900	600
320	1000	650	-			

Do a variance analysis for each of the categories of items listed and identify areas which need more management attention.

Give advice on the type of possible action for each case.

(20 marks)

Q6.

- (a) Discuss the factors to be considered in converting a final cost estimate for a project into a 'project budget' compatible with an organisation's cost accounts.

(08 marks)

- (b) Schedule Control needs continuous monitoring of a project. Discuss possible problems that can be encountered in the construction of an underground waterline, their effect on the planned project schedule and hence on the cost forecast.

What changes may need to be made in each instance in order to ensure meeting the completion deadline with minimum cost overruns?

(12 marks)