

National Exams December 2010

98-Civ-B8, Management of Construction

3 hours duration

Notes:

1. If doubt exists as to the interpretation of any question, the candidate is urged to submit with the answer paper, a clear statement of any assumptions made;
2. This is a "Closed Book" exam. Candidates may use one of two calculators, the Casio or the Sharp approved models;
3. Any five questions constitute a complete paper. Only the first five questions as they appear in your answer book will be marked.
4. All questions are of equal value.

Marking Scheme

1. 20 marks
2. 20 marks
3. 20 marks
4. 20 marks
5. 20 marks
6. 20 marks

1. Scheduling:

The activities of a small project are given in the table. Each activity has three durations: optimistic (a), most likely (m), and pessimistic (b). Calculate the expected project duration and show the critical path.

Activity Name	Depends on	Durations		
		a	m	b
A	---	3	4	5
B	---	2	6	9
C	---	1	2	4
D	A	2	8	10
E	B	1	4	6
F	B	7	10	12
G	C	12	16	20
H	D	7	8	10
I	F, G	3	6	9

2. Litigation:

Discuss the main reasons for delay-related claims on construction projects and the contractual modifications that can reduce such claims. Also, discuss the various approaches by which a claim can be settled and the types of analyses that need to be performed to validate and judge such claims.

3. Safety Practices and Regulations:

Briefly discuss the main reasons for safety problems on construction sites and some of the important practices that need to be adopted on the site of a high-rise building to assure an accident-free environment.

4. Engineering Economics:

A town is considering building a new toll road and two proposals have been put forward. The costs of each proposal are summarized in the following table. With interest rate at 8%, which proposal should be adopted (using present worth).

	Proposal A	Proposal B
Initial cost of road	\$16,500,000	\$25,000,000
Annual maintenance	\$30,000	\$100,000
Major rehabilitation every	10 years	5 years
Cost of major rehabilitation	\$3,000,000	\$2,000,000
Toll fees to be collected / year	\$1,000,000	\$2,000,000
Life of project	50 years	50 years

5. Project Control:

- (a) Briefly discuss how the percentage complete is calculated for an activity and for the whole project.
- (b) Briefly discuss the Earned Value approach for project control and the indices used to evaluate the project's time and cost performances.

6. Labor Relations:

- (a) Discuss the approaches that can be used to reduce the fluctuation in labor demand (hiring and firing) in projects.
- (b) Discuss the pros and cons of hiring unionized versus non-unionized labor for your construction project.