

National Exams December 2003

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.

1. Scheduling:

Given the following project data, calculate and show:

- A. The logic network and identify the critical path.
- B. Draw a "late" bar chart.
- C. What is the effect of delaying activity G by 6 days?
- D. What is the overall percent complete of the project, to-date?

Activity	Predecessors	Duration	Cost	Actual Percent Complete, to-date
A	---	4	5	100%
B	A	6	3	100%
C	A	4	4	80%
D	A	9	2	70%
E	B	3	4	40%
F	D	8	5	---
G	B	10	2	---
H	C, E	2	2	---
I	F	4	4	---
Finish	G, H, I	---	---	---

2. Contract Administration:

Discuss the advantages and disadvantages of the various types of negotiated cost plus contracts: (1) cost plus fixed percentage; (2) cost plus fixed fee; (3) Guaranteed Maximum Price; and (4) cost plus sliding fee.

3. Safety Practices and Regulations:

Construction sites can be considered as being one of the most hazardous types of working environments. Discuss some of the important practices that need to be adopted on the construction site of a high-rise building project to assure an accident-free environment.

4. Engineering Economics:

An appraisal of two alternative projects is being carried out. Given the following cash flow, calculate the most economical plan using present value profit. Use discount rate of 10% per year.

	<u>Project A</u>	<u>Project B</u>
Initial Investment	\$60,000	\$75,000
Yearly operating cost	\$1,500	\$1,000
Major Maintenance (every 4 years)	\$5,000	\$3,000
Yearly revenue	\$12,500	\$16,000
Life	12 years	12 years

5. Estimating and Bidding:

Discuss the competitive bidding process and the major components of a bid price proposal (i.e., direct cost, etc). Describe the bid unbalancing practice of contractors and how it can be detected by owners.

6. Site Investigation:

In most projects, a preliminary site investigation is conducted at the design stage while a secondary site investigation is conducted by prospective contractors at the bidding stage. Discuss the purpose of each site investigation and the type of information obtained from each.