

## National Exams May 2011

### 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. (a) 5 marks, (b) 5 marks, (c) 5 marks, (d) 5 marks
2. 20 marks
3. 20 marks
4. 20 marks
5. 20 marks
6. 20 marks

**1. Scheduling:**

Given the following project data, calculate and show:

- A. The logic network and identify the critical path.
- B. What is the effect of delaying activity G by 7 days?
- C. Which activities have free floats and how much?
- 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	90%
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	----

**2. Contract Administration:**

Discuss the advantages and disadvantages of the various types of competitive bidding contracts and their suitability for different project environments.

**3. 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.

**4. Engineering Economics:**

An appraisal is being carried out for two alternative projects with the cash flows shown below. At what level of revenue will Project A be as attractive as Project B?. Use discount rate of 10% per year.

	<b>Project A</b>	<b>Project B</b>
<b>Initial Investment</b>	\$60,000	\$90,000
<b>Yearly operating cost</b>	\$1,500	\$1,000
<b>Major Maintenance</b> (every 4 years)	\$5,000	\$3,000
<b>Yearly revenue</b>	?	\$26,000
<b>Life</b>	12 years	12 years

**5. Estimating and Bidding:**

Discuss 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. 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 highway rehabilitation project to assure an accident-free environment.