

## National Exams Dec 2009

### 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:**

Given the following project information:

- Project has five activities: A, B, C, D, and E, which has durations of 3, 3, 4, 6, and 5 days, respectively;
- Activity B has a Start-to-Start relationship with Activity A;
- Activities C and D depend on Activity A; and
- Activity E depends on Activities C and B; and also has a Finish-to-Finish relationship with Activity D.

Calculate and show:

- The logic network and the Critical Path.
- What is the effect of delaying activity C by 2 days?

### **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. Insurance:**

Briefly describe the differences among bid bond, performance bond, and retainage (holdback) percentage, and discuss their effectiveness on ensuring quality construction.

#### **4. Engineering Economics:**

A town is considering building a new bridge and two proposals have been put forward. The costs of each proposal are summarized in the following table. With the cost of capital at 9%, which proposal should be adopted (using present worth).

	Bridge A	Bridge B
Initial cost of bridge	\$6,500,000	\$5,000,000
Initial cost of roads	\$3,500,000	\$3,00,000
Annual maintenance of bridge	\$5,000	\$9,000 for first 15 years and \$11,500 thereafter
Annual maintenance of roads	\$3,000	\$2,500
Life of bridge	60 years	30 years
Life of roads	60 years	60 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. 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 tunneling projects construction, to assure an accident-free environment.