

**National Exams Dec 2014**

**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:**

The table shows the activities' names, durations and predecessors of a small project. Draw the project network, identify the critical path and calculate the activities' total floats.

ACT	DUR	PREDECESSORS
B	5	
M	4	B
N	9	B
X	15	B
A	5	M,N
F	6	N,X
Q	2	X
C	4	X
Y	10	A
S	10	F,A
R	2	Q,F
T	5	C,Q
K	7	Y,S,R
U	3	K,T

**2. Contract Administration:**

Discuss the advantages and disadvantages of the following 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. Insurance:**

Discuss the differences between bid bonds and performance bonds. Also, discuss the purpose and mechanics of liens in construction.

**4. Engineering Economics:**

An appraisal is being carried out for two alternative projects with the cash flows shown below. Using Present Worth analysis, at what level of initial investment will Project A be as attractive as Project B? Use a discount rate of 10% per year.

	Project A	Project B
<b>Initial Investment</b>	<b>?</b>	\$70,000
<b>Yearly operating cost</b>	\$1,500	\$1,000
<b>Major Maintenance</b> (every 3 years)	\$5,000	\$3,000
<b>Yearly revenue</b>	\$15,000	\$30,000
<b>Life</b>	4 years	3 years

**5. Construction Delays:**

Briefly discuss the following: excusable versus non-excusable delays; compensable versus non-compensable delays; and concurrent versus non-concurrent delays. Briefly mention one of the credible methods to analyze project delays and determine owner versus contractor responsibility.

**6. Safety Practices and Regulations:**

Briefly discuss each of the following safety measures and give an example of project types in which each measure is essential:

- |                                       |                             |
|---------------------------------------|-----------------------------|
| 1 Scaffolding                         | 6 First aid and fire safety |
| 2 Fall protection                     | 7 Confined spaces           |
| 3 Ladder safety                       | 8 Record keeping            |
| 4 Respiratory safety                  | 9 Welding safety            |
| 5 Personal protective equipment (PPE) | 10 Training                 |