

**National Exams May 2013**

**98-Civ-B8, Management of Construction**

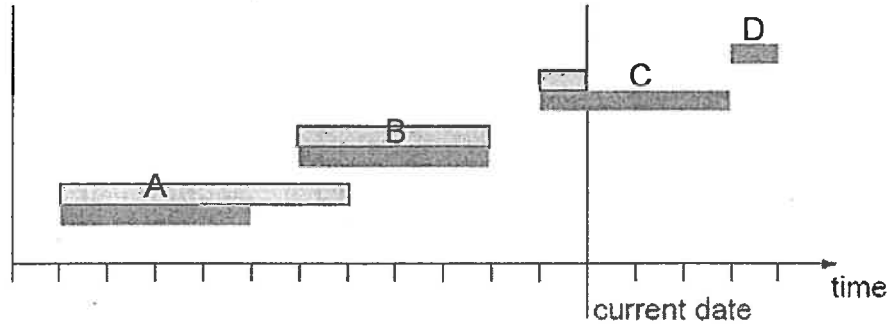
**3 hours duration**

**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. Project Control:**

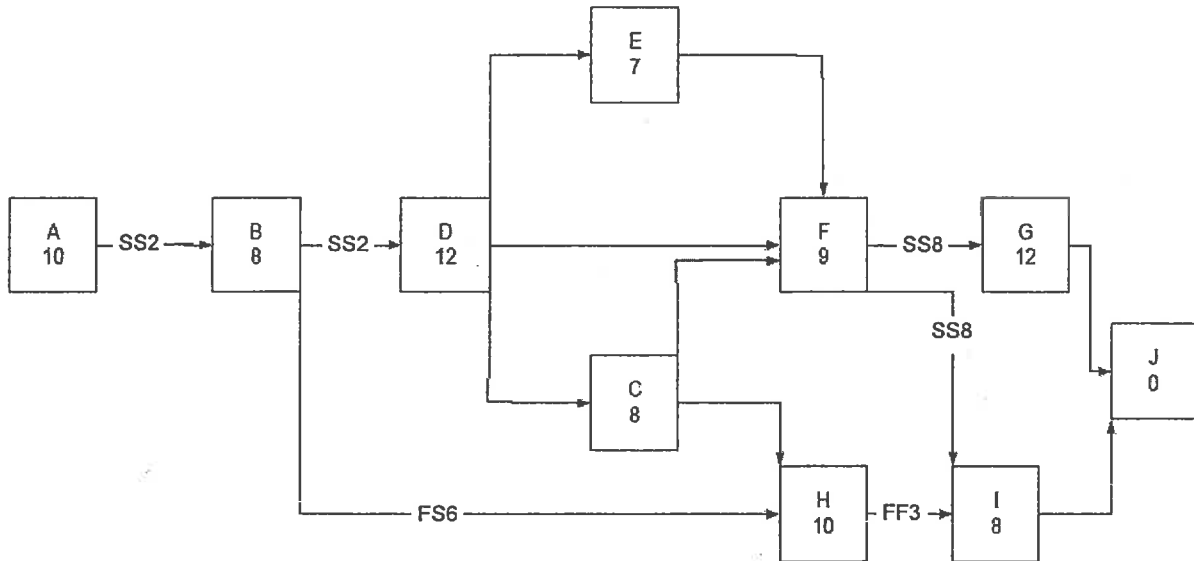
In the bar chart below, the lighter bars indicate the actually time spent on each activity and the darker bars show planned durations. Activity C is still not finished. Assume that one day of work costs \$1,000 per activity. Use the earned value method and the 20/80 rule to compute the cost performance index (CPI) for the activities and for the project.



**2. Scheduling:**

For the project network below, all relationships are specified on the arrows:

(a) Identify the critical path and calculate its length in days. (b) Draw a late bar chart.



**3. Insurance:**

Discuss the differences between bid bonds and performance bonds. Also, discuss the effect of a monthly retainage percentage on both the owner and contractor organizations in terms of cash flow and risk management.

**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.

	Project A	Project B
<b>Initial Investment</b>	\$90,000	\$80,000
<b>Yearly operating cost</b>	\$1,500	\$1,000
<b>Major Maintenance</b> (every 3 years)	\$5,000	\$3,000
<b>Yearly revenue</b>	?	\$20,000
<b>Life</b>	4 years	3 years

**5. Construction Delays:**

Briefly discuss the following: excusable versus non-excusable delays; compensable versus non-compensable delays; concurrent versus non-concurrent delays; and but-for versus windows analysis of project delays.

**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 high-rise building project in a downtown area to provide an accident-free work environment.

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### Marking Scheme

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