

National Exams December 2012

07-Str-B2, Management of Construction

3 hours duration

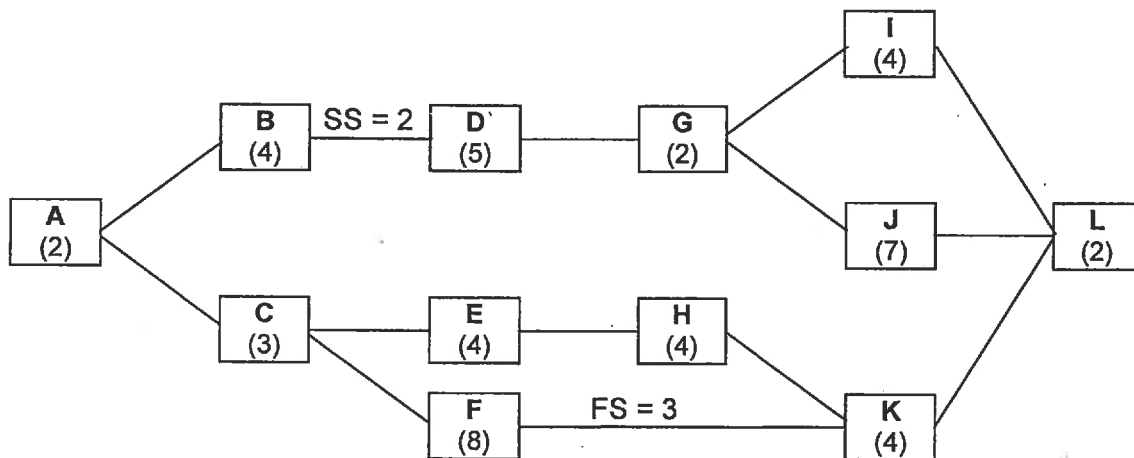
Notes:

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

1. Scheduling:

Perform CPM calculations for the small project below and determine activity times, the critical path, and draw a late bar chart. Durations are shown in brackets and special relations are indicated on the links.



2. Estimating and Bidding:

Discuss the typical steps in the competitive bidding process, the major contract types under this 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.

3. Safety Practices and Regulations:

Briefly discuss the main reasons for safety problems on construction sites and some of the important practices that need to be adopted on the construction site of a high-rise construction in a downtown location to assure an accident-free environment.

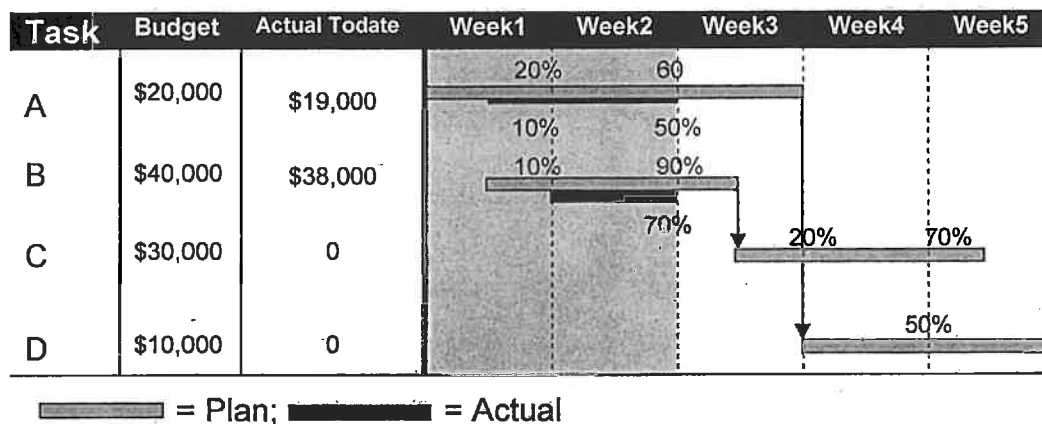
4. Engineering Economics:

Two alternative projects are being evaluated. Given the cash flows below, calculate the most economical plan using present value analysis. Use $i = 10\%$ per year.

	<u>Project A</u>	<u>Project B</u>
Initial Investment	\$25,000	30,000
Yearly operating cost	\$1,000	\$1,500
Major Maintenance (every 3 years)	\$4,000	\$5,000
Life	3 years	4 years

5. Project Control:

Planned bar chart and actual progress until the end of week 2 are as follows:



- Draw the BCWS, BWCP, and ACWP curves for this project at the end of week 2.
- Comment on the actual versus planned progress at end of week 2?
- Calculate the cost performance and the schedule performance indexes at end of week 2.

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.