National Exams May 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. Estimating and Bidding:

Consider the activity "Wood Gym Floor" in a certain project. The RS Means data is included below: (a) Calculate the two missing numbers in the table below; (b) In a new job, the quantity of work is 1250 m2. You will be using local labor and the bare hourly rates for a local tile-layer and a local tile layer helper are $30 and $23, respectively. To finish the job faster, you plan to use three tile layers and two helpers. Estimate the construction cost and duration for this activity.

095 800 | Wood Composition Flooring		CREW	DAILY OUTPUT	LABOR HOURS	UNIT	2014 BARE COSTS				TOTAL INCL O&P
						MAT.	LABOR	EQUIP.	TOTAL	
0100	WOOD COMPOSITION Gym floors 57 mm x 175 mm x 10 mm, on 51 mm grout setting bed	D-7	13.94	?	m2	48.5	27	-----	75.5	?

The details of the crew D-7 are:

Crew D-7	Bare costs		Incl. Subs O&P		Cost per labor-hour	
	Hr.	Daily	Hr.	Daily	Bare Costs	Incl. O&P
1 Tile Layer	$26.10	$208.80	$38.60	$308.80	$23.55	$34.83
1 Tile Layer Helper	$21.00	168.00	31.05	248.40		
16 L.H., Daily Totals		$376.80		$557.20	$23.55	$34.83

2. Scheduling:

For the project network below: (a) Identify the critical path and calculate activities' total floats; (b) What is the effect of delaying activity C by 3 days on project duration?
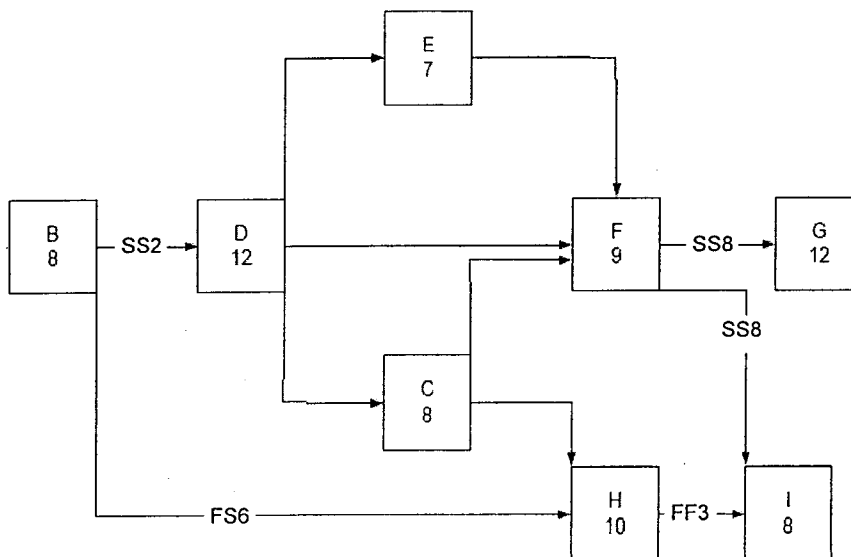
3. Labor Relations:

Discuss the pros and cons of hiring unionized versus non-unionized labor for your construction project.

4. Engineering Economics:

Annual maintenance costs for a particular section of highway pavement are $3,500. The placement of a new surface would reduce the annual maintenance cost to $650 per year for the first 5 years and to $1,100 per year for the next five years. The annual maintenance after 10 years would again be $3,500. If maintenance costs are the only saving, calculate the maximum investment that can be justified for the new surface, with interest at 5%.

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 bridge rehabilitation project in a high traffic area to provide an accident-free work environment.