

國立交通大學 104 學年度第 1 學期

博士班資格考筆試考試試題

土木工程學系 營管組

科目：工程成本管理

選考學生數：1

考試時間：60 min

共 2 頁，第 1 頁

1. A cost manager is conducting a preliminary estimate of the cost of building a 600-MW (百萬瓦) fossil-fuel plant. It is known that a 200-MW plant cost \$100 million 20 years ago when the approximate cost index was 61.15, and that cost index is now 102.33. The cost capacity factor (成本容量因子) for a fossil-fuel power plant is 0.75. What is the preliminary cost estimate of the 600-MW fossil-fuel plant? (30%)
2. Suppose the total budget of a construction project is \$35,000K (K=1,000). The data of the owner's estimated unit price, quantity and cost of each cost item are summarized in the following table. If this project is awarded to a lowest bidder who proposes a total bid price (i.e., total contractual price) equaling to \$31,500K, please determine the contractual unit price, quantity, and cost of each cost item according to the conventional practice in Taiwan.

Cost item	Owner's estimated unit price	Owner's estimated quantity	Owner's estimated cost	Contractual unit price	Contractual quantity	Contractual cost
A1	1,000 K	5	5,000 K	?	?	?
A2	2,000 K	4	8,000 K	?	?	?
A3	3,000 K	3	9,000 K	?	?	?
A4	4,000 K	2	8,000 K	?	?	?
A5	5,000 K	1	5,000 K	?	?	?

Total budget: 35,000 K

Total contractual price: 31,500 K

(30%)

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3. The planned duration and total contract price of a construction project are 10 months and 51 million dollars, respectively. The monthly budgeted cost of work scheduled (BCWS) of the project are given in the left of the following table. The monthly budgeted costs of work performed (BCWP) for the first month to the 5th month are also shown in the same table. Please determine whether this project is currently ahead of or behind the schedule according to the given data?

Unit: Million dollars

Month	Monthly budgeted cost of work scheduled (BCWS)	Monthly budgeted cost of work performed (BCWP)	Cumulative BCWS / total contractual price (in %)	Cumulative BCWP / total contractual price (in %)
0	0	0		
1	2	1		
2	5	3		
3	4	5		
4	3	5		
5	2	3		
6	10			
7	5			
8	6			
9	8			
10	6			

(40%)