

※ 考生請注意：本試題可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1 根據下列之文字說明，分類說明營造商在不同情況下，訂定利潤之原則：(15%)

In a market without much work, contractor may bid a project at cost or with little profit to cover their overhead and keep their staff employed. On complicated projects, contractors may bid the work low in hopes of making significant profit on future changes. Conversely, they may bid the work high to cover the increased risks of a complex project. It is not unusual for contractors to offer very competitive prices when they hope to enter a new market or establish a relationship with a new owner. Some owners and designers are viewed as difficult to work with and may not receive good prices, particularly if the market is strong. Such issues are difficult to quantify but should be considered in the preparation of the estimate. They are usually treated as a percentage applied at the end of the estimate, included in either overhead or profit or in a final contingency.

2 Which type of contract is described in the following statement? Why? (15%)

The variation of this type of contract is called a guarantee maximum price. Here the contractor is reimbursed at cost with an agree-upon fee up to the guarantee maximum price. After this point the contractor is responsible for any additional costs. The contract commonly includes an incentive clause, which specifies that the contractor will receive additional profit for bringing the project in under the guarantee maximum price.

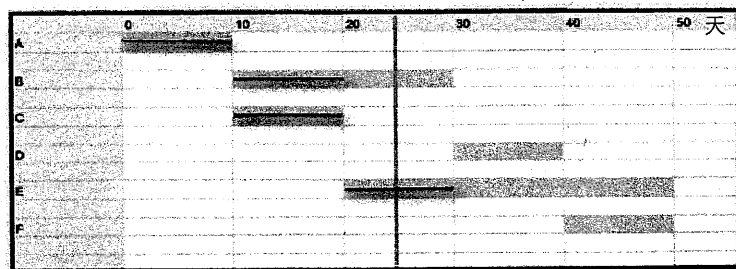
3 Construction Contract Issues (20%)

3.1 A construction project in Taipei has been delayed due to a week long heavy snow occurred in Feb. Will the contractor be granted the time extension? Why? What if the project is located in Finland, will the contractor be granted the time extension?

3.2 What is substantial completion? Any particular meaning of defining the date of substantial completion?

3.3 What is purpose of retainage? Does retainage present a financial burden to the contractor? Why

4 某一工程進行至第25天，各作業之資料如圖一所示，請填滿表一之空格，指出此工程在進度及成本之表現（須說明CPI, SPI所代表之意義），並預測專案之完工成本。(20%) (請於答案卷上作答)



圖一

表一

作業	成本(\$)	預計完成百分比	實際完成百分比	BCWS	BCWP	ACWP	SPI	CPI	進度及成本表現
A	1000					900			
B	2100					1100			
C	3000					3100			
D	3600					---			
E	2000					750			
F	8000								
合計	19700					5850			

Project CPI = _____、Project SPI = _____、預測完工成本= _____

5 某工程專案作業資料如表所示，各後續作業之關係及延時(lag)皆為(FS, 0)

5.1 計算表二中各作業之 ES、EF、LS、LF、FF、TF，並找出要徑作業及專案時間。(20%)

表二

作業	時間(天)	與前置作業之關係
A	5	---
B	8	A
C	3	---
D	4	B, C
E	6	B, C
F	6	A
G	3	C
H	2	G, F
I	5	F
J	6	G
K	2	H, I
L	2	D, K, E
M	5	K

5.2 若是用 Early Start 排程，作業 C 延遲三天完成，專案會不會延遲？會有作業會因作業 C 延遲而影響其開始時間？為什麼？(5%)。

5.3 若是用 Late Star，排程若是作業 D 延遲三天完成，專案會不會延遲？會有作業會因作業 D 延遲而影響其開始時間？為什麼？(5%)。

*CPI: Cost Performance Index, SPI: Schedule Performance Index, BCWS: Budgeted Cost for Work Scheduled, BCWP: Budgeted cost for work performed, ACWP: Actual Cost of Work Performed

ES: Early Start、EF: Early Finish、LS: Late Start、LF: Late Finish、FF: Free Float、TF: Total Float