

# 大同大學 九十一 學年度研究所碩士班入學考試試題

考試科目：管理科學

所別：資訊經營研究所

第 1/1 頁

註：本次考試 不可以參考自己的書籍及筆記； 不可以使用字典； 不可以使用計算器。

1. Consider the following table to solve the following question sets.
- (a) Compute the expected time and the variance for each activity. (14%)
  - (b) Determine all the critical paths (CPMs) and the value of the CPM. (16%)
  - (c) If we want to complete this project within 25 days, please compute the probability. (5%)
  - (d) Follow question (c), determine the total crash cost and the CPMs if changes occur. (15%)
- ( $\beta$  Distribution is applied.  $\mu=(O+4M+P)/6$ ,  $\sigma=(P-O)/6$ ,  $P(Z \geq 0)=0.5$ ,  $P(Z \leq 0.19)=0.0753$ )

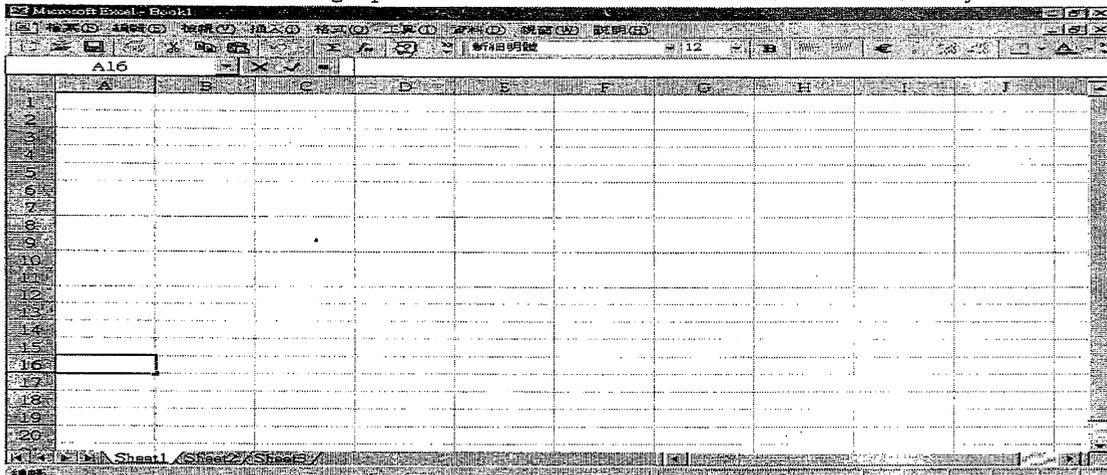
Activity	1-2	1-3	1-4	2-3	2-5	3-5	3-6	4-6	4-7	5-6	5-8	6-8	6-7	7-8
Most Likely Time	5	10	14	5	9	3	7	3	4	4	12	6	1	6
Optimistic Time	2	7	5	2	6	3	7	3	1	4	9	6	1	3
Pessimistic time	8	19	17	14	12	3	13	21	7	10	15	12	1	9
Unit crash cost	100	600	500	1800	1100	9000	300	1600	200	800	1200	400	9000	400

15 30 36 27 9 27 27 12 18 30 24 3 18

2. ABC insurance company has two products: special risk insurance and mortgages. The expected profits are 5 per unit on special risk insurance and 2 per unit on mortgages. Management wishes to maximize profit according to the following requirement:

Department	Special Risk	Mortgages	Work Hours available
Underwriting	3	2	2400
Administration	0	1	800
Claim	2	0	1200

Please use the following spreadsheet format to write down the necessary formula to solve this problem. (25%)



3. 武俠小說神鵰俠侶中，襄陽城之武林大會蒙古方與南宋方的與賽代表及各代表間捉對廝殺的勝算率如下附表。表格中在斜線上方表南宋之勝算率，下方則為蒙古之勝算率。因雙方人數並不相等，南宋乃禮義之邦，故提議蒙古可有一虛擬人物應戰，且不論此虛擬人物與南宋方何人對打，均假設為打成平手。請據此為南宋方與蒙古方擬出勝算率最高的出賽策略。如果有多種策略，請務必一一列出。(25%)

	郭靖	朱子柳	點蒼漁隱	楊過
金輪法王	5 / 5	9 / 1	8 / 2	7 / 3
霍都王子	0 / 10	6 / 4	5 / 5	2 / 8
達爾巴	0 / 10	8 / 2	7 / 3	3 / 7

( Please show all works to get full credit ! 請列出計算過程否則不予給分 )