

國立澎湖科技大學  
九十九學年度研究所入學考試試題

科目：離散數學

—作答注意事項—

考試時間：100 分鐘

作答方式：請用黑色或藍色筆在「答案卷」上作答

祝考試順利

科目：離散數學

1. How many 8-bit strings contain exactly three 0s? (15%)
2. How many edges in a tree with  $n$  vertices? (15%)
3. Simplify the expression  $x \wedge (y \wedge (x' \vee z))$ . (15%)
4. In the experiment of flipping a properly balanced coin three times, what is the probability of obtaining exactly two heads? (15%)
5. Please find the shortest path and the distance from  $S$  to every other vertex for the weighted graph in Figure 1. (25%)

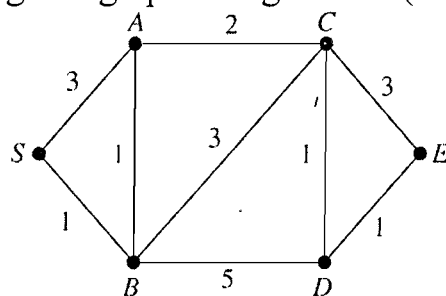
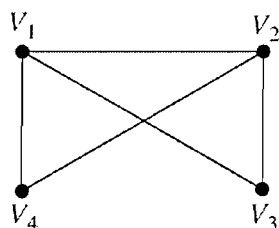


Figure 1

6. The graph in Figure 2(a) has the adjacency matrix  $A$  given in Figure 2(b). Please find the adjacency matrix to show the number of paths of length 2. (15%)



$$A = \begin{bmatrix} 0 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 \end{bmatrix}$$

(a)

(b)

Figure 2