

## 淡江大學九十學年度碩士班招生考試試題

系別：資訊管理學系

科目：資訊概論

准帶項目請打「○」否則打「×」	
計算機	字典
×	×

本試題共 / 頁

1. Give the definition of each of the following terms. (20%)
- (a) virtual memory                      (b) modem                      (c) NP-Complete  
 (d) entity-relationship diagram      (e) Turing test                (f) bluetooth
2. Describe the functions of a hub, a bridge and a router. If possible, use examples to make your answer as detailed as possible. (18%)

3. (a) What kind of errors can be corrected by the following error-correcting code? Explain your answer. (6%)

Symbol	Code
A	011100
B	111010
C	100110
D	001111
E	101001

- (b) Use the code presented in (a) to decode the following message. (6%)  
 100100 001110 010100 100000
4. (a) Convert the following base eight notations to their equivalent hexadecimal forms. (7%)  
 (1) 101 (2) 4321
- (b) Convert the following base ten notations to their equivalent two's complement forms using patterns of twelve bits. Express your answer in hexadecimal form. (7%)  
 (1) 890 (2) -1999
- (c) Given a logical expression  $F = \text{NOT}((a \text{ AND } b) \text{ OR } c) \text{ XOR } (b \text{ AND } c)$ , identify the conditions that produce a *true* value for F. (where a, b and c are Boolean variables). (6%)

5. Construct a search tree to find a sequence of moves that can drive an unsolved eight-puzzle from the initial state to the goal state. (15%)

1		3
4	2	5
7	8	6

(initial state)

1	2	3
4	5	6
7	8	

(goal state)

6. (a) Describe the procedures of using insertion sort and quick sort respectively to arrange the following list L in ascending order. (9%)  
 $L = (75, 68, 99, 12, 8, 55, 66)$
- (b) Compare the complexity of insertion sort and quick sort. (6%)