

國立成功大學

113學年度碩士班招生考試試題

編 號：218

系 所：會計學系

科 目：計算機概論

日 期：0202

節 次：第 2 節

備 註：不可使用計算機

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

一、選擇題 50 分(每題五分)

1. How many wired and/or wireless computers and mobile devices might a router be able to connect?  
a. more than 200    b. more than 450    c. more than 500    d. There is no limit.
2. Which of the following are radio waves that provide a high-speed signal transmission?  
a. generations    b. microwaves    c. fixed access events    d. indices
3. Which of the following is NOT a common type of memory card?  
a. SDXC    b. Memory Stick PRO Duo    c. MX6    d. SDHC
4. Retail and grocery stores use which kind of bar code?  
a. UPC (Universal Product Code)  
b. Interleaved 2 of 5  
c. Codabar  
d. POSTNET (Postal Numeric Coding Technique)
5. What does CMOS, which provides high speeds and consumes little power, stand for?  
a. cache memory on silicon  
b. circuit method-off-synched  
c. classic measured online semiconductor  
d. complementary metal-oxide semiconductor
6. Assume that a data file has an index consisting of  $N$  items, where  $N$  is large. If a binary search of the index is used to find an item, then, of the following, which best approximates the mean number of probes required to locate a specific index entry?  
a.  $\frac{(N+1)}{2}$     b.  $\frac{N(N+1)}{2}$     c.  $(\log_2 N) - 1$     d.  $N \log_2 N$
7. If  $F$  is defined by  
Function  $F(X : \text{integer}) : \text{integer};$   
Begin  
  if  $X=1$  then  
     $F := 0$   
  else  
     $F := X * F(X-1) + X * X$   
end;

then the value of

- a. F(4) is 100
- b. F(1) is 1
- c. F(0) is 1
- d. F(4) is 99

8. Which of the following is a way of testing the design of a software system?

- a. Entity-relationship diagram
- b. Class diagram
- c. Structure chart
- d. Structured walkthrough

9. A common MSI chip is a 4-bit adder. Four of these chips can be hooked up to form a 16-bit adder. How many pins would you expect the 4-bit adder chip to have ?

- a. 8
- b. 12
- c. 16
- d. 20

10. What is the value of the postfix expression  $6-2+1.2\ 7.5\ 1.5\ /\ **$  ?

- a. 12
- b. 24
- c. -24.5
- d. 48

二、非選擇題 50 分

1. (15%) If function F is defined as follows:

FUNCTION F(X,Y,Z)

Y ← Z

F ← X+Z

RETURN

Suppose the function is invoked by the statement  $A=F(B,B,B+C)$ , and the initial values are  $B=1.0$ ,  $C=2.0$ . find the output value of A when the parameter transfer is

- (a) call by value
- (b) call by address

(c) call by name

2. (5%) Consider a single-surface disk drive having the following characteristics.

Number of tracks per disk:	35.
Number of sectors per track:	10.
Bits per second transfer rate:	250000.
Revolutions per minute rotational speed:	300.

Assume that one byte is 8 bits. How many bytes is the nominal storage capacity of one such disk?

(If no gaps or special formatting is assumed.)

3. (15%) Consider the task of searching a sorted list of  $n$  numbers using the binary search method. Suppose that the chances of successful and unsuccessful searches are equally probability.

(a) (5%) Give the maximum number of comparisons for a search.

(b) (10%) Give the average number of comparisons for a search.

4. (5%) Let  $a + \overline{ab} = a + b$  and  $a + ab = a$  be true in Boolean Algebra. Simplify the following Boolean expression  $X + XYZ + YZ\overline{X} + WX + \overline{W}X + \overline{XY}$ .

5. (10%) A tridiagonal array  $ARR$  is an  $n$  by  $n$  array in which  $ARR[i, j] = 0$  if the absolute value of  $i - j$  is greater than 1.

(a) (5%) What is the maximum number of nonzero elements in such an array?

(b) (5%) If these elements in the hand formed by these three diagonals are stored rowwise in memory, obtain an addressing formula for accessing  $ARR[i, j]$ , where  $|i - j| \leq 1$ .