淡江大學98學年度轉學生招生考試試題

系別：資訊工程學系三年級　　科目：資　訊　概　論

准帶項目請打「V」	
X	計 算 機

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1. **Multiple Choice** (only one is the correct answer) 15%

____(a). Which communication range is shortest?

(1) WiMAX (2) GSM (3) WiFi (4) Bluetooth

____(b). Which technology does Bluetooth use?

(1) OFDMA (2) FHSS (3) CSMA/CA (4) QPSK

____(c). Which one is wrong description about wireless communication?

(1) The more transmission power sender uses, the longer transmission range sender gets.

(2) The higher RSSI receiver receives, the higher modulation rate sender can use.

(3) A node with omni antenna can simultaneously send data to difference receiver.

(4) A node with omni antenna can simultaneously receive data from difference sender.

____(d). Which one provider multiple-access opportunity by frequency division?

(1) FDMA (2)TDMA (3)CDMA (4)SDMA

____(e). Which communication system does only send data in line-of-sight link?

(1) WiMAX (2) GPRS (3) WiFi (4) IrDA

2. Fill the blank. (3 pts each if not specified)

(a) The unit used in scanner is "dpi". Write the full name for "dpi".

(b) $(776)_8 + (1657)_8 = (\quad)_{16}$

(c) Explain what is the bandwidth.

(d) What is the unit used in the bandwidth?

(e) Name two out of three (列出其中兩種) image file formats for web pages.

(f) What is the print out after the execution of the given program fragment: (6 pts)

(g) What is the print out after the execution of the given program fragment:

Problem (f):

```
A=3: B=4: C=5
IF A<B THEN
T=A: A=B: B=T
PRINT A, B, C
```

Problem (g):

```
DIM A(3,3)
FOR I = 0 TO 3
  FOR J = 0 TO 3
    A(I,J) = (I+1)*(J+1)
  NEXT J
 NEXT I
PRINT A(1,3), A(3,2)
```

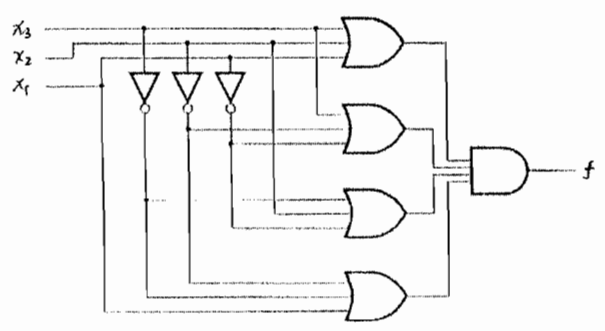
Problem (h):

```
push (A, d)
push (A, f)
pop(A)
push (A, d)
push (A, g)
pop (A)
```

(h) Suppose an empty stack A goes through the given stack operations above, what is the final state of A?

(i) Write the Boolean expression for the given circuit diagram. (5 pts)

Problem (i):



「本試題雙面印製」

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2-2

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(j) Represent $-115_{(10)}$ as an 8-bit binary number in both the (1) sign-magnitude and (2) 2'S complement representation. (8 pts)

(k) Under what kind of condition(s) that can you use the binary search?

(l) How many comparisons are needed to know that there is no such data if binary search method is used and the data base has 125 data?

(m) Consider the partial program given on the right, (6 pts) what would be the print out if parameter transmission is by
(1) call-by-value;
(2) call-by-name; (3)call-by-address;

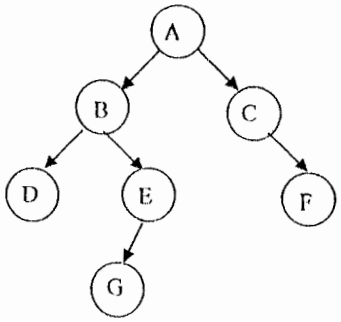
```
PROCEDURE SUB(A, B, C, D)
 REAL A,B,C,D;
   B=A+A;
   D=A+C;
   RETURN;
 END;
.....
.....
X=1; Y=2 ; Z=7;
CALL SUB(X, X, X+Y, Z)
PRINT Z ;
```

(n) Consider the giving linked list below whose head is item D. (5 pts each, total 10 pts)
Assume that an item G is added physically to the bottom of the list and inserted logically between items F and A.
(1) Following the insertion, write the content of the "pointer to the next item";
(2) After insertion, if item E is deleted logically from the table, write the content of the "pointer to the next item".

Problem (n):

	Data	Pointer to next item	Pointer to previous item
1	A	3	6
2	B	0(Null)	5
3	C	5	1
4	D	6	0(Null)
5	E	2	3
6	F	1	4
7			

(o) Use the tree given below, write down the visit order if it is traversed by
(a) pre-order; (b) in-order; (c)post-order. (6 pts)



3. Design an algorithm for determine whether a positive integer is a prime (質數). 16 pts
Explain your algorithm both with an overall idea and steps details(必須解釋整體概念&其中詳細步驟)
Finally, use 179 to test your algorithm, indicate the intermediate results when runs through your algorithm
(以 179 來檢測你的方法，將中間結果詳細列出).