

慈濟大學 101 學年度 研究所碩士班招生考試命題紙

科目：計算機概論

共5頁

選擇題 (75%，每題答對得3分，答錯不倒扣)

1. Consider the following function.

```
int f ()
{
    int x, result;
    result = 0;
    for ( x = 0; x < 6; x++ )
    {
        if ( ( x % 3 ) == 1 )
            result = result + x;
        else
            result = result + 1;
    }
    return result;
}
```

What value is returned as the result of f ()?

(A) 6 (B) 7 (C) 8 (D) 9

2. Kruskal's algorithm and Prim's algorithm find a minimum spanning tree for a connected weighted graph. Which of the following are the design paradigms used by these algorithms?

Kruskal's algorithm

Prim's algorithm

(A) Dynamic programming The greedy method

(B) Dynamic programming Divide and conquer

(C) The greedy method The greedy method

(D) The greedy method Dynamic programming

3. A full binary tree is a rooted tree in which every node other than the leaves has two children. How many internal nodes are there in a full binary tree with 100 leaves?

(A) 50 (B) 99 (C) 100 (D) 101

4. What is the octal equivalent of the bit pattern 11101111?

(A) 238 (B) 239 (C) 240 (D) 241

5. What is the hexadecimal equivalent of the bit pattern 110011100010?

(A) xCE2 (B) 1CB0 (C) xCB2 (D) xEC2

6. What is the octal equivalent of the hexadecimal pattern x24C?

(A) 24 (B) 16 (C) 588 (D) 1066

7. Which one is not the feature of structured programming?

(A) repetition (B) index (C) sequence (D) selection

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8. Which statement should be avoided in structured programming?

- (A) sub (B) if (C) while (D) goto

9. Consider the following pseudocode.

```
x = 1;
y = 1;
while (x < 1000)
begin
    x = 3x;
    y = y + 2;
end
```

What is the value of y at the end of the pseudocode?

- (A) 5 (B) 7 (C) 9 (D) 1001

10. Consider the following pseudocode.

```
x = 1;
y = 1;
while (y < 1000)
begin
    if (x < 1000)
    begin
        x = 3x;
    end
    y = y + 2;
end
```

What is the value of y at the end of the pseudocode?

- (A) 5 (B) 7 (C) 9 (D) 1001

11. Consider the following pseudocode.

```
A = TRUE;
B = FALSE;
x = 0;
if (A or B)
begin
    x = 1;
end
```

What is the value of x at the end of the pseudocode?

- (A) 0 (B) 1 (C) 2 (D) 3

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12. Consider the following pseudocode.

```
A = TRUE;
B = FALSE;
x = 0;
if (A and B)
begin
    x = x + 2;
end
```

What is the value of x at the end of the pseudocode?

- (A) 0 (B) 1 (C) 2 (D) 3
13. Which of the following languages can be understood by computer?
(A) symbolic language (B) machine language (C) high-level language (D) all of the above
14. Which one is least like a procedural language?
(A) C (B) FORTRAN (C) COBOL (D) C++
15. Which of the following languages is object-oriented language?
(A) C (B) FORTRAN (C) COBOL (D) C++
16. There are four phases in system development.
a. design b. testing c. analysis d. implementation
What is the correct order of these four phases?
(A) abcd (B) adbc (C) bcad (D) cadb
17. Which one is not the feature of waterfall model in software development?
(A) The most practical and successful model
(B) A phase cannot be started until the previous phase is complete
(C) The development process flows in one direction
(D) all of the above are correct
18. Consider the following function.
- ```
f(int y)
{
 while (y < 1000)
 {
 y = f(y+1);
 }
 return y;
}
```
- What value is returned as the result of f(0)?  
(A) 0 (B) 1 (C) 1000 (D) 1001

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19. Consider the following function.

```
int x = 0;
f(int y)
{
 while (y < 1000)
 {
 y = f(y+1);
 x = x + 1;
 print x, y; //print the value of x and y
 }
 return y;
}
```

What is the first line of the output printed by f(0)?

(A) 0, 1000 (B) 1, 1000 (C) 1, 1 (D) 1000, 1000

20. Consider the following pseudocode. All variables are integers and  $x \geq 1$ .

Pseudocode 1

```
sum = 0;
for i = 1 to x
 sum = sum + i;
output(sum);
```

Pseudocode 2

```
sum = 0;
i = <value>;
while (<condition>)
 i = i + 1;
 sum = sum + i;
output(sum);
```

If you want pseudocode 1 and pseudocode 2 have the same output, what are <value> and <condition>?

|     | <value> | <condition> |
|-----|---------|-------------|
| (A) | 0       | $i < x - 1$ |
| (B) | 0       | $i < x$     |
| (C) | 1       | $i < x$     |
| (D) | 1       | $i < x + 1$ |

21. Which of the following statements is wrong?

- (A) A graph is a collection of nodes (vertices) and lines connecting pairs of vertices.
- (B) A path is a sequence of vertices
- (C) A cycle is a path consisting of at least 3 vertices that starts and ends at the same vertex.
- (D) Undirected edges are called arcs.

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22. Which of the following is not a basic file structure?  
(A) array file (B) indexed file (C) hashed file (D) sequential file
23. Which of the following is not one of the components of database management system (DBMS)?  
(A) hardware (B) users (C) procedure (D) network
24. SQL is a programming language designed for managing data in which of the following database model?  
(A) hierarchical model (B) relational model (C) network model (D) distributed model
25. Which of the following is not a lossless data compression method?  
(A) run-length encoding (B) Huffman encoding  
(C) Lempel Ziv encoding (D) MPEG encoding

問答題 (25%)

1. Explain RAM and ROM (5%)
2. Explain the following network types: LAN, MAN, WAN (5%)
3. Explain “deadlock” and “starvation” when resources can be used by more than one process. (5%)
4. Write the pseudocode of bubble sort algorithm. (10%)