

單選題，共 25 題，每題 4 分(答錯不倒扣)

1. Which operation is functionally complete in Boolean logic?
  - (A) OR
  - (B) NOR
  - (C) NOT
  - (D) AND
  - (E) None of the above
  
2. Which algorithm or representation is typically used for circuit construction?
  - (A) Logic Optimizer
  - (B) Branch-and-Bound
  - (C) Multiply-Accumulate
  - (D) Sum-of-Products
  - (E) Dynamic Programming
  
3. Which of the machines is designed to directly provide a wide range of powerful features in such a way that the end result is a smaller program?
  - (A) MISC
  - (B) CISC
  - (C) SISC
  - (D) SICC
  - (E) RISC
  
4. How many bits are required for each address field in a machine language instruction on a computer with a maximum of  $2^N$  memory cells?
  - (A)  $N-1$
  - (B)  $N+1$
  - (C)  $2N$
  - (D)  $2^N$
  - (E)  $N$
  
5. Typically, what do we refer to a program written in assembly language as?
  - (A) Data Program
  - (B) Object Program
  - (C) Control Program
  - (D) Stored Program
  - (E) Source Program

注意：背面有試題

6. What should be transmitted to the processor to alert the computer that an input/output operation has been completed?
  - (A) Condition Code
  - (B) Execution Instruction
  - (C) Operand Address
  - (D) Interrupt Signal
  - (E) Switch Context
  
7. Which machine is able to provide the set of services and resources created by the system software and made available by the users?
  - (A) Harvard
  - (B) Multi-Tasking
  - (C) Virtual
  - (D) Von Neumann
  - (E) Super-computing
  
8. Which type of computer network allows third parties (such as vendors or customers) to access restricted information?
  - (A) Intranet
  - (B) Middlednet
  - (C) Lannet
  - (D) Internet
  - (E) Extranet
  
9. What is the device that connects internetworks and provides routing between different wide area networks?
  - (A) Gateway
  - (B) Switch
  - (C) Bridge
  - (D) Repeater
  - (E) Hub
  
10. Which following representation of numeric data has two forms of zero?
  - (A) Fixed-sized Numbers
  - (B) Floating Point
  - (C) Signed-magnitude
  - (D) Ten's Complement
  - (E) Scientific Notation

11. What type of computer application is designed to facilitate the exchange of messages and files on a network?
- (A) Chat Room
  - (B) Social Network
  - (C) Bulletin Board System
  - (D) World Wide Web
  - (E) Internet of Things
12. What is the common term used to describe John Von Neumann's radically different computer concept based on a model conceived in 1946?
- (A) External Program
  - (B) Stored Program
  - (C) Programmable Function
  - (D) Memory Unit
  - (E) Firmware
13. What is the process involved in finding errors that are uncovered by repeated use with varying input values?
- (A) Resource Recycling
  - (B) Program Maintenance
  - (C) Data Warehousing
  - (D) Garbage Collection
  - (E) Buffer Management
14. Which gate produces the carry portion of two binary digits in a half adder?
- (A) AND
  - (B) NAND
  - (C) XOR
  - (D) OR
  - (E) NOR
15. Which process is used to verify who is granted access to one computer, whether it is a local computer or a Web server?
- (A) Authorization
  - (B) Encryption
  - (C) Certification
  - (D) Authentication
  - (E) Accounting

16. Which unit of binary storage has a size that is processor-dependent?
- (A) Byte
  - (B) Nibble
  - (C) Bit
  - (D) Word
  - (E) Block
17. Which are useful for measuring the performance of one machine against another, and evaluating the sensitivity of an algorithm to variations in input on a particular machine?
- (A) Time Trials
  - (B) Multivariate Analysis
  - (C) Comparison Times
  - (D) Turing Tests
  - (E) Benchmarks
18. What is the common practice of sending fraudulent messages to trick recipients into releasing sensitive information or installing malicious software on their system?
- (A) Fishing
  - (B) Pharming
  - (C) Blasting
  - (D) Phishing
  - (E) Hijacking
19. How does a numeric overflow occur?
- (A) Using fixed-sized numbers in a floating-point calculation
  - (B) A calculation producing an invalid result
  - (C) A calculation producing a value that won't fit into the allotted space
  - (D) Using a radix point instead of a decimal point
  - (E) Using a radix point in a fixed-sized number calculation
20. Which of the following is the best description of a register?
- (A) A memory location which stores a sum
  - (B) A device that contains the arithmetic/logic unit
  - (C) A device that contains the control unit
  - (D) A large memory location in auxiliary storage
  - (E) A small memory location in the central processing unit

21. Which of the following is stored in the instruction register?
- (A) The memory location of an instruction
  - (B) An instruction
  - (C) The number of program instructions executed
  - (D) The number of programs executed
  - (E) The data used by an instruction

22. Given the following C code,

```
#include <stdio.h>
```

```
void add(unsigned a) { ++a; }
```

```
void sub(unsigned *a) { --(*a); }
```

```
unsigned a = 0;
```

```
int main() {  
    if (a = 3) {  
        for (int i = 0; i < 2; i++)  
            add(a);  
        for (int i = 0; i < 2; i++)  
            sub(&a);  
    }  
    printf("%u", a);
```

```
    return 0;
```

```
}
```

what is the output displayed on the screen?

- (A) 0
- (B) 1
- (C) 3
- (D) 5
- (E) None of the above

23. Given the following C code,

```
#include <stdio.h>

int A(int m, int n) {
    if (m == 0)
        return n + 1;
    else if (n == 0)
        return A(m - 1, 1);
    else
        return A(m - 1, A(m, n - 1));
}

int main() {
    printf("%d", A(2, 2));
    return 0;
}
```

what is the output of the following code?

- (A) 4
- (B) 5
- (C) 6
- (D) 7
- (E) 8

24. Given the following C code,

```
#include <stdio.h>
#include <unistd.h>

int main() {
    for (int i = 1; i < 5; i++) {
        if ((fork()) == 0)
            fork();
        else {
            fork();
            fork();
        }
    }
    return 0;
}
```

how many processes are created (including the main process) ?

- (A) 256
- (B) 625
- (C) 3125
- (D) 1296
- (E) 7776



25. Given the following C code,

```
#include <stdio.h>
void f(char *in) {
    (*in--)+++;
}
void (*p)(char *) = f;
int main() {
    char c = 48;
    p(&c);
    p(&c);
    printf("%d", c);

    return 0;
}
```

what is the output of the following code?

- (A) 49
- (B) 50
- (C) 51
- (D) 52
- (E) None of the above