

國立臺北科技大學 101 學年度碩士班招生考試

系所組別：2150 電機工程系碩士班戊組

第一節 計算機概論 試題

第一頁 共二頁

注意事項：

1. 本試題共 22 題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

一、選擇題 (30%, 2% each)

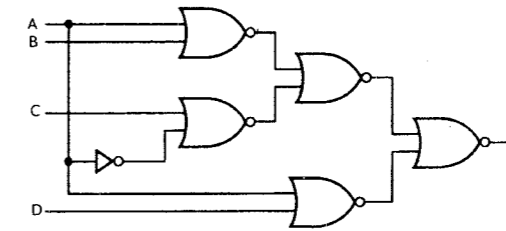
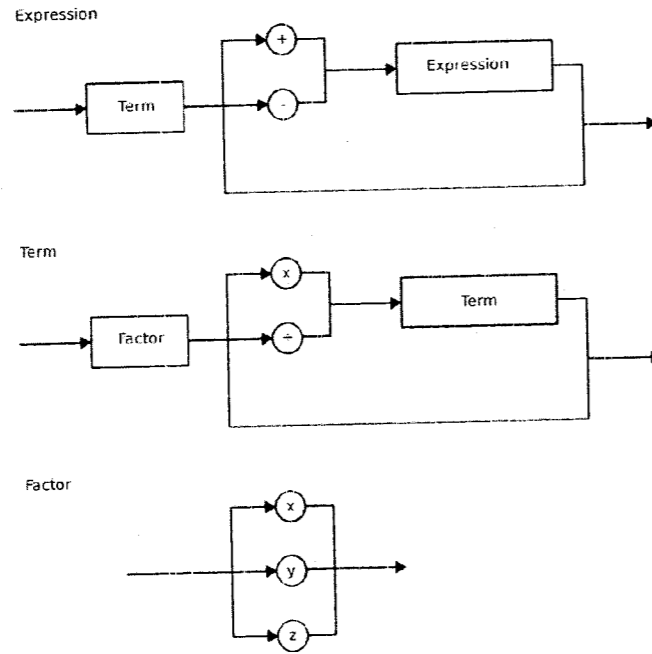
1. A public-key encryption system involves the use of two keys. The key used to decrypt messages is called
(A) Public key (B) Private key (C) Shared key (D) Secret key
2. In order to locate and receive documents on the world wide web, each document is given a unique address called
(A) URL (B) HTTP (C) HTML (D) IP address
3. Which of the following is a protocol for controlling the right to transmit a message in a network?
(A) UDP (B) CSMA/CD (C) TCP (D) FTP
4. Which layer of the TCP/IP hierarchy physically transmits a message?
(A) Application (B) Transport (C) Network (D) Link
5. Which of the following is **NOT** a step in the process of compiling a program?
(A) Executing the program (B) Parsing the program (C) Lexical analysis (D) Code generation
6. Which of the following is **NOT** associated with object-oriented programming?
(A) Inheritance (B) Resolution (C) Encapsulation (D) Polymorphism
7. Which of the following components of an operating system is **NOT** part of the kernel?
(A) Shell (B) Device driver (C) Scheduler (D) Memory manager (E) Dispatcher
8. Which of the following function is **NOT** contained in BIOS(basic input/output system)?
(A) Load kernel from mass storage
(B) Detect hardware error
(C) Keep computer time accurately
(D) Manage memory usage

9. The end of a CPU time slice is indicated by the occurrence of a signal called
(A) Semaphore (B) Interrupt (C) Login (D) Deadlock
10. IP address (version 4) is a pattern of?
(A) 8 bits (B) 16 bits (C) 32 bits (D) 64 bits
11. Which of the following is the advantage of Peer-to-Peer model over Server-Client model?
(A) More private (B) More reliable (C) No time constraint (D) Easy to connect
12. A CPU designed to execute a minimal set of machine instructions called
(A) MIMD (B) CISC (C) SISD (D) RISC (E) SIMD
13. Which of the following is used to translate domain name to IP address?
(A) File server (B) Mail server (C) Name server (D) FTP server
14. Which of the following is **NOT** a role of a typical operating system?
(A) Control the allocation of the machine's resources
(B) Control access to the machine
(C) Maintain records regarding files stored in mass storage
(D) Assist the computer user in the task of processing digital photographs
15. Which of the following is **NOT** an activity performed entirely within a CPU?
(A) Fetch instructions
(B) Perform Boolean operations
(C) Perform arithmetic operations
(D) Move data between registers

二、簡答題 (70%)

1. (10%) Draw a parse tree for the expression $x + y \times z$ based on the following syntax diagrams.

注意：背面尚有試題



2. (10%) Design a C/C++ function to implement finite-state machine to recognize either “left” or “right” as an input string. When two strings are recognized, output a “match” signal. Otherwise, output a “mismatch” signal.
3. (10%) Design a C/C++ **recursive** function for printing a linked list backwards. Indicate a case as an example to explain your function.
4. (10%) What is the RAID? Describe the advantage of the RAID? Give two different levels of RAID as examples.
5. (10%) Use Karnaugh map (map-entered variables) to find the minimum sum of product expression of G.

$$G(A, B, C, D, E, F) = \sum m(0, 2, 3, 11, 15) + \sum d(1, 10, 13) + E(m_5 + m_7) + F(m_9)$$
6. (10%) Consider the following three-level NOR circuit:
 - (a) Find all static 1-hazards in this circuit. (5%)
 - (b) Redesign the circuit that is free of all hazards. (5%)

7. (10%) The eight-bit floating-point format is described as follows. The leftmost bit is the sign bit. The next three bits are the exponent field and the remaining four bits are the mantissa field. Both are encoded in BCD code and the negative numbers are represented in two’s complement.
 - (a) What is the best approximation to the square root of 2 that can be expressed in the eight-bit floating-point format? What value is actually obtained if this approximation is squared by a machine using this floating-point format? (5%)
 - (b) Perform the addition on 11110101 and 11101100 and give the result in base-ten representation. (5%)