

I. Multiple Choice – 單選題 (2 points for each question)

- () 1. When we use more bits to represent a floating-point number in computers, which of the following statements is incorrect?
(A) A more precise number can be represented. (B) A larger number can be represented.
(C) A number with more truncation error can be represented. (D) A smaller number can be represented.
- () 2. Assume $x = 1$ and $y = 2$. Which of the following is true?
(A) $x == 1$ and $y > 2$ (B) $x == 1$ and $y > 1$ (C) not ($x == 2$ and $y > 0$) (D) $x > 1$ and $y > 1$
- () 3. When the number of bits used to represent an unsigned number in a computer is not enough, what situation will occur?
(A) shuts down (B) overheat (C) underflow (D) overflow
- () 4. A 4-minute song is sampled at rate of 10,000 samples/second with the bit depth of 16. What is the size of the song?
(A) 32×10^5 Bytes (B) 24×10^5 Bytes (C) 48×10^5 Bytes (D) none of the above
- () 5. The ____ operation complements the value of a Boolean expression. (A) NOR (B) NOT (C) OR (D) AND
- () 6. The operation "if ($n - 2 > 0$) print n" is a(n) ____ operation.
(A) conditional (B) hierarchal (C) iterative (D) sequential
- () 7. What is the minimum height of a binary tree with 102 nodes? (A) 3 (B) 4 (C) 5 (D) 6
- () 8. Convert 13.875_{10} to its binary representation. (A) 1100.011 (B) 1101.111 (C) 1010.011 (D) 1010.101
- () 9. Convert 96_{10} to its hexadecimal representation. (A) 60_{16} (B) 70_{16} (C) 80_{16} (D) 90_{16}
- () 10. ____ is a huge interconnected "network of networks". (A) LAN (B) WAN (C) WWW (D) The Internet
- () 11. The ____ stores the address of a memory location. (A) MAR (B) MDR (C) IR (B) PC
- () 12. Which statement about registers is true?
(A) A register is slower than cache. (B) A register is given an address and not a name.
(C) A register serves some special purpose. (D) none of the above
- () 13. A memory unit is organized as a $4,096 \times 1,024$ two dimensional array. What is the size of MAR?
(A) 21 bits (B) 22 bits (C) 23 bits (D) 24 bits
- () 14. If a computer uses 4-byte cells, how many memory cells are there in a memory of 1 GB?
(A) 2^{27} (B) 2^{28} (C) 2^{29} (D) 2^{30}
- () 15. ____ is needed for a code of 1000 instructions to run at a machine of 100 MIPS.
(A) 100 ns (B) $1 \mu\text{s}$ (C) $10 \mu\text{s}$ (D) 1 ms
- () 16. A Web page is identified by a(n) _____. (A) URL (B) TCP (C) HTTP (D) DNS

- () 17. To alert the computer that an input/output operation is done, a(n) ____ is transmitted to the processor.
(A) condition code (B) broadcast (C) interrupt signal (D) execution instruction
- () 18. Which is used to locate a memory location? (A) decoder (B) multiplexor (C) cache (D) IR
- () 19. ADSL lines usually provide ____ upload bandwidth than download.
(A) greater (B) more reliable (C) less (D) less reliable
- () 20. BIOS is usually stored in _____. (A) RAM (B) cache (C) hard disk (D) ROM
- () 21. What is the best Big-Oh of the quick sort? (A) $O(\log n)$ (B) $O(n)$ (C) $O(n \log n)$ (D) $O(n^2)$
- () 22. In a machine language instruction operation code takes 8 bits. What is the maximum number of distinct operation codes that can be recognized and executed by the processor on this machine?
(A) 256 (B) 1024 (C) 8192 (D) 65536
- () 23. The ____ is used to fetch, decode, and execute instructions.
(A) arithmetic/logic unit (ALU) (B) I/O controllers (C) memory (D) control unit
- () 24. C++ and Java are examples of ____ languages.
(A) low-level programming (B) machine (C) assembly (D) high-level programming
- () 25. A(n) ____ is a program that translates a program of high-level languages into a corresponding object program.
(A) assembler (B) compiler (C) encoder (D) scheduler
- () 26. In assembly language a _____ is a code, usually from 1 to 5 letters, that represents a machine operation code.
(A) memory code (B) operation code mnemonic (C) symbolic address (D) label
- () 27. _____, such as text editors, are sometimes organized into collections called program libraries.
(A) Utilities (B) Packages (C) Office tools (D) Programming tools
- () 28. What does XML stand for?
(A) Example Markup Language (B) eXtra Modern Link
(C) eXtensible Markup Language (D) X-Markup Language
- () 29. Which is a interpreted programming language? (A) C++ (B) Java (C) PHP (D) none of the above
- () 30. ____ is a freeware operating system. (A) Windows .NET (B) Linux (C) Palm OS (D) Mac OS
- () 31. Which has the highest speed? (A) fast Ethernet (B) ADSL (C) cable modem (D) dial-up phone line
- () 32. Which is not a Web browser? (A) Firefox (B) Google Chrome (C) Apple Safari (D) Apache
- () 33. Which is used to measure the print quality? (A) RPM (B) DPI (C) MIPS (D) PPM

- () 34. The program that controls the overall operation of the computer is the _____.
(A) graphical user interface (GUI) (B) operating system (C) assembler (D) scheduler
- () 35. ____ user interfaces include photography, touch, sound, fax, video, and TV.
(A) Multimedia (B) Graphical (C) Sensory (D) Audio
- () 36. Which is a disadvantage of an assembly language?
(A) It is easier for a user to understand than a machine language. (B) It is difficult to create data.
(C) It allows only numeric memory address. (D) none of the above
- () 37. A(n) ____ is a collection of documents interconnected by pointers called links.
(A) FTP (B) transport (C) HTTP (D) hypertext
- () 38. Which protocol can be used for remote login? (A) SSH (B) FTP (C) DNS (D) HTTP
- () 39. Which program uses SMTP? (A) MSN (B) Firefox (C) Outlook Express (D) none of the above
- () 40. A(n) ____ keeps a queue of programs ready to run and selects the one that will execute next.
(A) memory manager (B) scheduler (C) information manager (D) compiler
- () 41. A(n) ____ is a computer program written to intentionally damage computer systems.
(A) assembler (B) virus (C) compiler (D) scheduler
- () 42. Which port does SSH use? (A) 20 (B) 21 (C) 22 (D) 23
- () 43. Which type of operating systems is used in a missile launching system?
(A) real-time (B) embedded (C) compact (D) parallel
- () 44. Which type of operating system is used in mobile phones?
(A) real-time (B) embedded (C) compact (D) parallel
- () 45. What device can be used to connect multiple twisted pairs? (A) bridge (B) modem (C) hub (D) repeater
- () 46. Which port does HTTP use? (A) 80 (B) 21 (C) 23 (D) 25
- () 47. Which OSI layer provides a point-to-point link between any two switching nodes?
(A) application (B) session (C) presentation (D) network
- () 48. Which is a network layer protocol? (A) ICMP (B) FTP (C) DNS (D) TCP
- () 49. The style of computing in which some nodes provide services and some nodes request services is called ____ computing.
(A) remote (B) real-time (C) mobile (D) client-server
- () 50. A Web client and server communicate through _____. (A) DNS (B) ISP (C) HTTP (D) FTP