

靜宜大學 101 學年度碩士班暨碩士在職專班招生考試試題

學系：資訊學院

科目：計算機概論

A. 單選題：(每一題 2 分，答錯不倒扣) 共 50 分

1. SSL (Secure Sockets Layer) is used to provide _____.
[A] reliable communication [B] QoS service [C] privacy protection [D] all of the above
2. The ASCII code for character A is $(41)_{16}$. Then the ASCII code for P is _____.
[A] $(79)_{10}$ [B] $(119)_8$ [C] $(120)_8$ [D] $(50)_8$
3. _____ allows you to create class hierarchies, where a base class gives its behavior and attributes to derived classes in a object-oriented program language.
[A] Inheritance [B] polymorphism [C] encapsulation [D] none of the above
4. Which of the following number is equal to hexadecimal number $(B.8)_{16}$?
[A] $(11.1)_{10}$ [B] $(13.4)_8$ [C] $(1010.1)_{10}$ [D] none of the above
5. Which of the 16-bit 2's complement representation is equivalent to -202 in decimal?
[A] 0000000011001010 [B] 1000000011001010 [C] 1111111100110101 [D] 1111111100110110
6. If $A = (58)_{16}$ and $B = (F0)_{16}$, what is the result of $A + B$? (+ represents logical operation XOR)
[A] $(F8)_{16}$ [B] $(50)_{16}$ [C] $(A0)_{16}$ [D] $(A8)_{16}$
7. Which of the following octal numbers is equal to the binary number $(101.011)_2$?
[A] 5.3 [B] 5.4 [C] 5.5 [D] 5.6
8. How to print a double variable (e.g. double a = 3.4) in the C language?
[A] `printf("%d", a);` [B] `printf("%i", a);` [C] `printf("%f", a);` [D] `printf(a);`
9. The compiler in Java translates a Java source program into _____ as the form of instructions that the JVM executes.
[A] executecode [B] bitcode [C] bytecode [D] none of the above

10. A ____ algorithm finds a particular item (target) among a list of data.
[A] sorting [B] searching [C] iterative [D] recursive
11. Given a list of integer, {7, 98, 26, 44, 13}. What is the list after pass 2 for bubble sort in ascending order? ____
[A] 7, 13, 26, 98, 44 [B] 7, 13, 98, 26, 44, [C] 7, 98, 26, 13, 44 [D] 7, 98, 13, 26, 44
12. The _____ is a protocol for e-mail services
[A] FTP [B] HTTP [C] SMTP [D] TELNET
13. In the physical layer, a network with the star topology consists of one central ____, which acts as a conduit to transmit messages
[A] Hub [B] Server [C] Client [D] Modem
14. In UNIX, the _____ (Hint: A user interface) receives and interprets the commands entered by the user.
[A] MS-DOS [B] Shell [C] Cronjob [D] Man
15. _____ is a supplementary protocol that allows non-ASCII data to be sent through SMTP.
[A] MIME [B] HTML [C] POP3 [D] XML
16. How do you represent the number -57 in 8 bits using two's complement?
[A] 11000111 [B] 11111001 [C] 00000110 [D] 11000110
17. If the memory address space is 64MB and the word size is 8bits, then how many bits are needed to access each word?
[A] 20 [B] 22 [C] 24 [D] 26
18. Which of the following is not an operating system?
[A] Android [B] iOS [C] X-Window 7 [D] Symbian
19. PPS.tv is a Chinese _____ streaming video networks.
[A] program-to-program [B] peer-to-peer [C] process-to-process [D] none of the above

20. When the computer is _____, the BIOS is started.

- [A] shut down [B] error [C] ended [D] booted

21. If $A=(11101101)_2$ is an 8-bit 2's complement integer, what is the result of arithmetic right shift 3 bits on A?

- [A] $(3)_{10}$ [B] $(-3)_{10}$ [C] $(00011101)_2$ [D] $(-29)_{10}$

22. What is the standard port number for HTTP?

- [A] 80 [B] 8080 [C] 23 [D] 22

23. 32bits are used to represent an Internet address. Which of the following decimal notation can be also represented as 00001011110010010000111101001001?

- [A] 5.200.14.27 [B] 10.200.14.27 [C] 11.201.15.73 [D] 11.200.14.9

24. In electronics, a _____ is a device that selects one of several analog or digital input signals and forwards the selected input into a single line.

- [A] adder [B] decoder [C] encoder [D] multiplexer

25. Given the Fibonacci sequence, Fib(n), What is the value of Fib(4)?

$$\text{Fib}(n)= \left(\begin{array}{ll} 0 & \text{if } n = 0 \\ 1 & \text{if } n = 1 \\ \text{Fib}(n) = \text{Fib}(n-1)+\text{Fib}(n-2) & \text{if } n > 1 \end{array} \right)$$

- [A] 0 [B] 1 [C] 2 [D] 3

B. 問答題: 共 50 分

1. Find the asymptotic order of the following recurrence equation, where $n > 0$ and $T(1) = 1$. (10%)
 - (a) $T(n) = T(n/2) + 1$
 - (b) $T(n) = T(n-1) + n$
2. Construct a binary tree with **Postorder** sequence: DEBFCA, and **Inorder** sequence: DBEACF. (5%)
3. Sort the following list of integers in increasing order by using the QuickSort step by step. (5%)
58, 21, 66, 15, 32, 41, 22, 56, 17
4. Explain the starvation and deadlock by given an example for each case. (10%)
5. Consider the following set of processes with the length of the CPU-burst time in milliseconds:

Process	Arrived Time	Burst Time
P1	0	5
P2	1	1
P3	2	3
P4	3	4
P5	4	6

- (a) Draw two Gantt charts of processing execution of these processes using First-Come-First-Service (FCFS) and Round Robin (RR) scheduling (quantum=3), respectively. (10%)
- (b) What is the turnaround time of each processing for the FCFS and the RR scheduling? (5%)
- (c) What is the waiting time of each processing for the FCFS and the RR scheduling? (5%)