

國立虎尾科技大學九十五學年度研究所（碩士班）入學試題

科目：計算機概論

所別：資訊管理系碩士班

計 5 頁第 1 頁

注意事項：（1）本試題共有二大題，共計一百分。

（2）請務必作答於答案卷中，並將題號標示清楚，否則不予計分。

I. 單選題(60%，每題 3 分，不倒扣)

- () 1. Which of the following servers is used to translate name address into IP address?
(A) DNS (B) NIS (C) NFS
(D) Web Server (E) none of the above.
- () 2. In database, the process to remove redundant data from table structure is called:
(A) structuration (B) normalization (C) hierarchy
(D) allocation (E) none of the above.
- () 3. The bandwidth for wireless LAN IEEE802.11b is:
(A) 22Mbps (B) 11Mbps (C) 100Mbps
(D) 1000Mbps (E) none of the above.
- () 4. $(293.AC)_{16} =$
(A) $(1237.35)_8$ (B) $(1223.53)_8$ (C) $(1232.35)_8$
(D) $(1237.35)_{10}$ (E) none of the above.
- () 5. Check the transmitted 7-bit data by even-parity error detection, which of the following is in error?
(A) 11100011 (B) 10101010 (C) 11111111
(D) 10010011 (E) none of the above.
- () 6. The execution time for one program is 100 ns, and multiplication instruction takes 80% of the execution time. If the new execution time is 25 ns, how to improve the speed of multiplication instruction?
(A) 2 times (B) 4 times (C) 8 times
(D) 16 times (E) none of the above.
- () 7. Consider the following page reference string 1, 2, 3, 4, 1, 5, 2, 3, 6, 5, 4, 1, 6, 2, 5, 4. How many page hits would occur for LRU replacement algorithm (assuming four frames)?
(A) 3 (B) 4 (C) 5
(D) 6 (E) none of the above.

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計 5 頁第 2 頁

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- () 8. One instruction cycle takes 40ns. Among them, IF(10ns), DE(5ns), EXE(10ns), MEM(10ns), WB(5ns). Assume 100 instructions, how many times is the speed of pipelining method over traditional method?
- (A) 4.85 (B) 2.85 (C) 3.85
(D) 3.95 (E) none of the above.
- () 9. The logical expression for $F(A, B, C, D) = \Sigma(7, 13, 14, 15)$ is
- (A) $ABC + BCD + CDA$ (B) $BCD + CDA + DAB$ (C) $DAB + ABC + BCD$
(D) $ABC + CDB + ACD$ (E) none of the above.
- () 10. $x=y=z=2$; $x*=x++$; $z=z++*++y$; $y+=++x-x++$; What are x, y, z final values?
- (A) 6, 2, 6 (B) 7, 3, 7 (C) 7, 2, 6
(D) 7, 3, 8 (E) none of the above.
- () 11. What is the value of 110101 (binary) plus 110011 (binary)?
- (A) 72 in decimal (B) 80 in decimal (C) 96 in decimal
(D) 104 in decimal (E) none of the above.
- () 12. What class does IP address: 192.168.1.1 belong to?
- (A) class A (B) class B (C) class C
(D) class D (E) none of the above.
- () 13. Which type of switching uses the entire capacity of a dedicated link?
- (A) circuit switching (B) datagram approach to packet switching
(C) virtual circuit approach to packet switching (D) message switching
(E) none of the above.
- () 14. What kind of topology does feature a central hub and use unshielded twisted-pair wire as the medium?
- (A) 10BASE2 (B) 10BASE5 (C) 10BaseT
(D) Token-ring (E) none of the above.

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計 5 頁第 3 頁

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- () 15. A device has two IP addresses. What possible of device could be?
(A) a computer (B) a router (C) a gateway
(D) any of the above (E) none of the above.
- () 16. The structure query language (SQL) provides three types of command involving data definition (DDL), data manipulation language (DML) and data control language. Which of the following commands are DML? (1) Create (2) Grant (3) Drop (4) Select (5) Commit (6) Delete.
(A) (1)(3) (B) (2)(5) (C) (4)(6)
(D) (1)(2)(3) (E) none of the above.
- () 17. What is a software-generated interrupt caused either by an error (for example, division by zero or invalid memory access), or by a specific request from a user program that an operating-system service be performed?
(A) Deadlock (B) Trap (C) Semaphores
(D) Polling (E) none of the above.
- () 18. Which of the following conditions hold simultaneously can arise deadlock situation in a system? (1) Mutual exclusion (2) Hold and wait (3) No preemption (4) Circular wait
(A) (1) (3) (4) (B) (1) (2) (4) (C) (2) (3) (4)
(D) (1) (2) (3) (4) (E) none of the above.
- () 19. Consider an ordered disk queue with requests involving tracks 98, 183, 37, 122, 14, 124, 65, and 67. If the read-write head is initially at track 53, what is the total number of head movements needed to satisfy these requests with the first-come, first-served (FCFS) scheduling algorithm?
(A) 182 (B) 360 (C) 468
(D) 640 (E) none of the above.

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計 5 頁第 4 頁

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() 20. Let A, B and C is Boolean variables. What expression does represent the DeMorgan's Theorem?

(A) $\overline{A * B * C} = \overline{A} + \overline{B} + \overline{C}$

(B) $A * (B + C) = (A * B) + (A * C)$

(C) $A + (B + C) = (A + B) + C$

(D) $A + B = B + A$

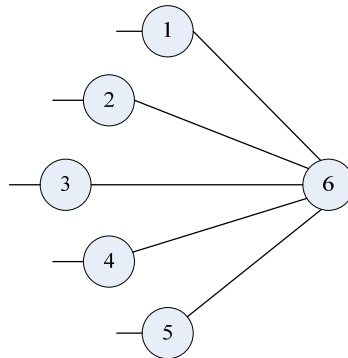
(E) none of the above.

II. 問答題(40%，每題 10 分)

1. Write a recursive program to calculate $1 + 2 + \dots + 10$. (10%)

(請以 C 或 JAVA 的語法為主)

2. One company has 6 routers in network 192.168.100.0. Each router of router 1-5 is assigned for 26 users. Please practice VLSM and assign IP for each subnet. (10%)



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3. The round-robin (RR) scheduling algorithm is designed especially for time-sharing systems. To implement RR scheduling, we keep the ready queue as first-in, first-out (FIFO) queue of processes. New processes are added to the tail of the ready queue. The CPU scheduler picks the first process from the ready queue, sets a timer to interrupt after 1 time quantum, and dispatches the process. Consider the following set of processes that arrive at time 0, with the length of the CPU burst time given in milliseconds:

Process	Burst Time
P1	12
P2	3
P3	3

Suppose that system uses a time quantum of 4 milliseconds. What is the average waiting time of these three processes? (10%)

4. Consider the following two tables of a database: (10%)

Key1#	Value1		Key2#	Key1	Value2
x	1		a	x	4
y	2		b	x	5
z	3		c	y	6
Table 1			Table 2		

The primary keys of Table 1 and Table 2 are Key1 and Key2, respectively. What are the results of the following SQL statements? (10%)

(A) `SELECT k1.*, k2.value2 FROM k1 LEFT JOIN k2 ON k1.key1 = k2.key1;`

(B) `SELECT k1.*, k2.value2 FROM k1 RIGHT JOIN k2 ON k1.key1 = k2.key1;`