

國立中山大學 101 學年度碩士暨碩士專班招生考試試題

科目：計算機概論【資管系碩士班甲組、丙組】

題號：4116

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(A) 共 4 題複選題，每題 5 分，共 20 分

1. Which operations are performed by Internet Protocol (IP)?
 - A. routing packets to remote hosts
 - B. providing a physical addressing scheme
 - C. defining frames
 - D. defining packets
 - E. transferring data between the internet layer and the network access layer
 - F. transferring data between the internet layer and the application layer
2. Which of the following are benefits of subnetting?
 - A. smaller broadcast domains
 - B. larger collision domains
 - C. low-level security provided
 - D. fewer broadcast domains
 - E. increased address flexibility
 - F. larger broadcast domains
3. A network administrator issues the ping 192.168.2.5 command and successfully tests connectivity to a host that has been newly connected to the network. Which protocols were used during the test?
 - A. ARP
 - B. CDP
 - C. DHCP
 - D. DNS
 - E. ICMP
4. Which statements about object-oriented programming are correct?
 - A. a class can be used to create at least one object
 - B. an instance of a class is the function called at run-time
 - C. its inheritance feature has the same concepts as polymorphism
 - D. its encapsulation feature refers to store the bundled data with methods
 - E. one method (or function) usually influences more than one object

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(B) 共 3 題單選題，每題 5 分，共 15 分

5. Given the following lines of codes, if $n=50$, $p=?$

```
int p = 0;
for (z=1; z <= n, z++) {
    for (x=1; x<=n-z+1; x++) {
        y=x+z-1;
        M[x,y]=0;
        p++;
    }
}
```

A. 1275 B. 5050 C. 2550 D. None of the above

6. Execute the following C program codes to find $y=?$

```
#include<stdio.h>
main()
{ int x=68, y=5;
  while(x) {x/=y++;}
  printf("%d\n", y);
}
```

A. $y=6$ B. $y=7$ C. $y=8$ D. $y=9$

7. Which of the following is not a valid prefix expression?

A. $-+ab+cd$ B. $/a+bc$ C. $*+*abcd$ D. $*-abcd$ E. $-*+abcd$

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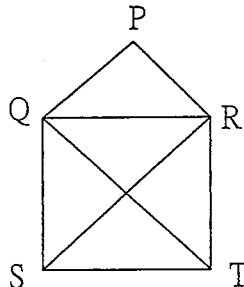
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(C) 共 3 題問答題，每題 5 分，共 15 分

8. Please translate the string 'NsYsU' into binary code by using ASCII standard. (ASCII decimal value 'A'=65 and 'a' = 97).
9. Please describe the features of cloud computing.
10. How can mobile APPs leverage the power of cloud computing?

(D) 共 2 題複選題，每題 5 分，共 10 分

11. In graph theory, an Eulerian trail is a trail in a graph which visits every edge exactly once. Here is a graph:



Which ones are Eulerian trails for this graph?

- (A) P Q R T Q S R P R
 - (B) S T R Q P R S Q T
 - (C) Q R P Q S T R S Q
 - (D) R T S Q R P Q T S
 - (E) T R Q P R S T Q S
 - (F) S Q R T S R P Q P
12. 下列邏輯式子 (Logical Formula) 何者為真：
 - (A) P or not (P and Q)
 - (B) P or Q
 - (C) (P and Q) and not (P or Q)
 - (D) not (P or Q) or (not P and Q)
 - (E) (P or (Q or R)) implies ((P or Q) and (P or R))
 - (F) P or (P and Q)

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(E) 共 3 題單選題，每題 5 分，共 15 分

13. One function of an operating system is to handle interrupts. Interrupts are:
- (A) a delay in processing due to operating system overload
 - (B) signals from hardware or software requesting attention from the operating system
 - (C) messages received from other computers
 - (D) None of the above
14. DOS was the first widely-installed operating system for personal computers. What does DOS stand for?
- (A) Digital Operating System
 - (B) Disk Operating System
 - (C) Desktop Operating System
 - (D) It's an abbreviation of the word "doors."
15. 在 Web 程式設計裡，一個 Web Service 裡可以擁有很多個：
- (A) 類別 (Class)
 - (B) 服務 (Service)
 - (C) 操作 (Operation)
 - (D) 物件 (Object)

(F) 共 2 題填空題，每題 5 分，共 10 分

16. Three-tier framework has the following three tiers: Presentation tier、Application tier、_____。
17. $f(0) = 0$ ， $f(1) = 1$ ， $f(x+2) = f(x+1) + f(x)$ ，請問 $f(20)$ 的值是 _____。

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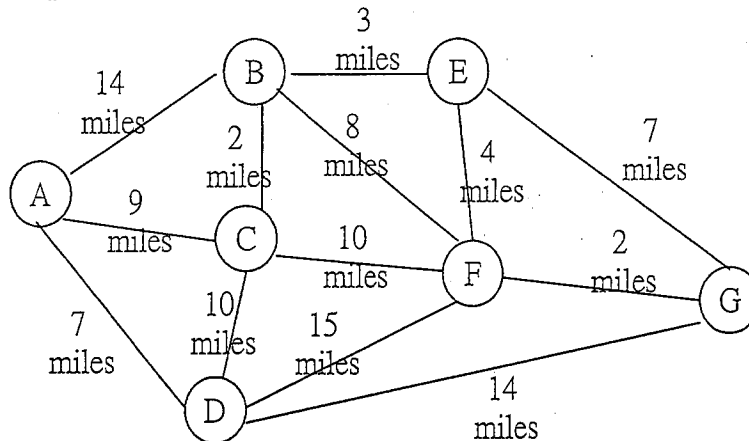
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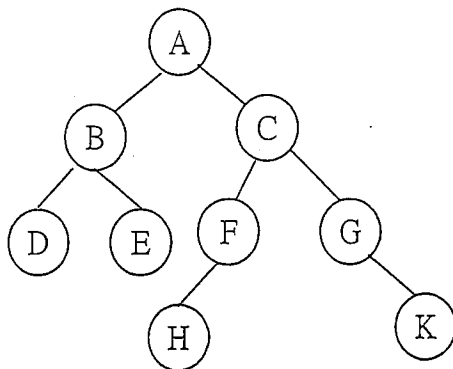
(G) 共 3 題簡答題，每題 5 分，共 15 分

18. Here is a graph:



Write the shortest path from the source vertex A to the destination vertex G.

19. Here is a small binary tree:



Write the order of the nodes visited in a post-order traversal.

20. At a fishhook factory, the foreman was instructed to place 1000 hooks in 10 boxes. The boss wanted the hooks stored in a way so that, if a certain number of hooks were requested, the foreman could quickly bring out one or more boxes and deliver that the exact amount without opening the boxes. How many hooks were in each of the 10 boxes?