

一、**選擇題** (答案可能一個或一個以上) 與 **填充題** : 共 20 題, 每題 3 分, 共 60 分。答錯皆不倒扣。

1. One customer sends his credit card information in a web page with URL begins with "https://" rather than "http://" 下列何者為真?
  - A. "Https" is a secured version of "Http"
  - B. Https maybe encrypt the session data using SSL protocol
  - C. The card information will be encrypted at the server site database
  - D. The card information will be encrypted between their browser and the receiving web server
  
2. 下列何者為真?
  - A. A computer uses multiple CPU is said to use Parallel Processing.
  - B. IEEE 1394 standard is also called FireWire
  - C. UART will convert parallel data from the Bus into serial data
  - D. The instruction set for a RISC processor usually contains 200 to 300 instructions.
  
3. IP Telephony, or voice communication over the internet. 下列何者為真?
  - A. It uses packet switching and circuit switching at the same time.
  - B. It utilizes a dedicated Internet Protocol, instead of a dedicated voice transmission line.
  - C. It can only travel on global internet, NOT private IP network on a LAN.
  - D. The protocol is usually called VoIP.
  
4. Time to read data from a hard disk is called Access Time, which includes:
  - A. Seek time
  - B. Rotational delay
  - C. Transfer time
  - D. Write time

5. In the design of database, Normal Forms are key criteria. 下列何者為真?

- A. From Unnormalized Form, after removing repeating groups, we get 1NF.      B. From 1NF, when remove partial dependencies, we get 2NF.
- C. From 2NF, when remove transitive dependencies, we get 3NF      D. By definition, 3NF is a relation in which every determinant is a candidate key.

6. 下列何者為真?

- A. HTTP is a request/response protocol between clients and servers.      B. Once a series of request has been completed, the connection will stay active until a hang-up signal is received.
- C. Persistent connections can also be made possible by using "cookies"      D. The locations of HTTP are given as UDDI.

7. For Hi-Definition TV video at a resolution of  $1920 \times 1080$ , 24 bits/pixel, 30 frames/second. Calculate the bandwidth necessary for transmitting in real time.

Answer. About \_\_\_\_\_ Gbps

8. For MP3 player, its voice audio takes 16-bit samples at 14.4 KHz. What is the bandwidth necessary for transmitting in real time.

Answer. About \_\_\_\_\_ Kbps

9. 下列何者為真?

- A. Ethernet is a multiple-access network.      B. Ethernet uses the CSMA/CD LAN technology.
- C. Not all nodes on an Ethernet can distinguish between an idle and a busy link.      D. A node on Ethernet will listen and avoid any transmitted frame to get collided with a frame sent by other node.

10. Regarding IP addresses, 下列何者為真?
- A. For all possible IP addresses, half of them are class A.
  - B. Class B and Class C addresses take up the other half of all possible IP addresses.
  - C. Every IP datagram contains the IP address of the destination host.
  - D. IP addresses contains Network address and Host address.
11. Which of the following protocols relate to Electronic Mail services?
- A. POP3
  - B. IMAP
  - C. MIME
  - D. SMTP
12. Caching web pages can be implemented in many ways. Some users know a particular machine is caching pages on behalf of the site and connect directly to this computer. This particular machine is called:
- A. Socket
  - B. Proxy
  - C. Network Daemon
  - D. Host
13. In sending a datagram, when the destination host is unreachable (perhaps due to link failure) and need to send error messages. The messages are defined in which of the following?
- A. ICMP
  - B. VPN
  - C. DHCP
  - D. RIP
14. On Grid Computing, 下列何者為真?
- A. It is a model for solving massive computational problems.
  - B. Mostly high performance computers participate in this type of computing network.
  - C. Most use "idle time" on many computers.
  - D. It involves use of secured authorization techniques to allow remote users to control computing resources.

15. On Entity-Relationship Model, 下列何者為真?

- A. It is a data model for descriptions of physical data models.      B. All Entities in ER model must exist without depending on some other entity type.
- C. Any attribute or set of attributes that uniquely identifies individual occurrences of an entity type is called Primary Key.      D. A Derived Attribute represents a value that is derivable from the value of a related attribute or set of attributes.

16. Which method(s) can be used to resolve Hashing collisions?

- A. Separate Chaining      B. Primary clustering
- C. Sliding Window      D. Buddy List

17. For XML, 下列何者為真?

- A. It is used for creating special purpose markup language.      B. It is a simplified subset of SGML.
- C. Its primary purpose is to protect data security.      D. It is capable of represent the data structure of "List".

18. On Computer Memory, 下列何者為真?

- A. DRAM is a type of Random Access Memory that stores each bit of data in a separate capacitor.      B. DRAM is a type of Volatile memory devices.
- C. DDR SDRAM can halve the required clock rate for a given data transfer rate.      D. Flash Memory is non-Volatile memory, but will eventually wear out after several thousand write cycles.

19. On Intranet, 下列何者為真?

- A. It is a WAN used in an organization.      B. Popular services would include HTTP, Email, FTP.
- C. When access Intranet from outside an organization, there will be a Firewall with a gateway for access.      D. A Personal Firewall is typically a piece of hardware that works on protecting personal computers.

20. To download a MP3 file of 10M bytes and use a telephone line of 14400 bps.  
How long would it take to download the file.

Answer. About \_\_\_\_\_ minutes

二、計算簡答題：共 8 題，每題 5 分，共 40 分，可以中文或英文回答。  
注意：回答時，請精簡扼要。

1. Suppose an I/O system with a single disk gets on average 40 I/O requests per second. Assume the average time for a disk to service an I/O request is 15 ms. What is the utilization of the I/O system?
2. Mean-Time-to-Failure, or MTTF, of a single disk is 50,000 hours. Assuming that failures occur independently and the failure probability of a disk does not change over time. What is the MTTF of an array of 100 (one hundred) disks?
3. Consider a disk with a sector size of 512 bytes, 2000 tracks per surface, 100 sectors per track, five double-sided platters, and average seek time of 10 msec.
  - 甲、What is the capacity of a track in bytes? What is the capacity of each surface? What is the capacity of the disk?
  - 乙、How many cylinders does the disk have?
  - 丙、Give 2 examples of valid block sizes.
4. What is RSS (Really Simple Syndication)?  
What is the usage of RSS aggregator?  
How does it change the behaviors of web site surfers?
5. In the computer security context, there is one type of malicious programs called "Trojan Horse" 木馬程式。How does a Trojan horse program work to perform its pre-planned malicious actions?  
How is it different from other computer virus program?

6. Many households use ADSL to connect to the Internet.  
What does ADSL stands for?  
Compare ADSL with DSL, what are the distinguishing characteristics of ADSL?
7. Consider the following code segment:

```
function foo (A : list[0..n-1]) {  
    var int i, j;  
    for i from 0 to n {  
        for j from 0 to n-i-1 {  
            if (A[j] > A[j+1])  
                swap(A[i],A[j+1])  
        }  
    }  
}
```

(Note: swap (a,b) will swap the content of the two variables a and b)

Describe what does this function do?  
There is a name for this function, what is that?

8. When two people access one file, each perform some read and write functions. Assuming no any particular currency control, please describe three possible problems may arise in this situation.