註:本次考試　<u>不可以</u>參考自己的書籍及筆記；　<u>不可以</u>使用字典；　<u>不可以</u>使用計算器。

A. Select the best answer. (20%)

1. Computer literacy involves the knowledge and understanding of (a) computer programming (b) computers and their uses (c) computer repair (d) all of the above.

2. A _____ controls access to the resources on a network. (a) server (b) workstation (c) client (d) tower

3. Many public locations are _____ that provide wireless Internet connections to users with mobile computers. (a) plug-ins (b) hot spots (c) Web logs (d) chat place

4. _____ is not a step in Web publishing. (a) planning a web site (b) deploying a web site (c) creating a Web site (d) moderating a Web site

5. In an e-mail address, a _____ is a unique combination of characters that identifies a specific user. (a) domain name (b) URL (c) user name (d) dot com

6. A _____, which can be used to upload and download files with other computers on the Internet, is integrated in some operating systems. (a) FTP program (b) Web program (c) mail program (d) chat program

7. The processor also is called the _____. (a) chip (b)adapter card (c) motherboard (d) central processing unit

8. _____ is the process of obtaining a program instruction or data item from memory. (a) Fetching (b) Decoding (c) Executing (d) Storing

9. _____ is a 16-bit coding scheme that is capable of representing more than 65,000 characters and symbols, enough for almost all the world's current written languages. (a) Unicode (b) ASCII (c) Microcode (d) EBCDIC.

10. The most widely used biometric device is the _____. (a) face recognition system (b) fingerprint scanner (c) hand geometry system (d) iris recognition.

11. The number of colors that a graphics processing unit displays is determined by _____. (a) color bandwidth (b) pixel pitch (c) dot pitch (d) bit depth

12. _____ is the number of bits in an area on a storage medium. (a) Capacity (b) Density (c) KBps (d) Allocation unit

13. _____ storage requires sequential access. (a) Microfiche (b) Floppy disk (c) Tape (d) DVD

14. A _____ is a malicious-logic program. (a) virus (b) Trojan horse (c) worm (d) all of the above

15. When a computer uses TCP/IP to send data over the Internet, the data is divided into small pieces, or _____. (a) tokens (b) packets (c) hubs (d) nodes

16. A _____ is a collection of related records. (a) data character (b) key field (c) data file (d) database

17. A _____ is malware that does not replicate itself to other computers. (a) virus (b) Trojan horse (c) worm (d) adware

18. A(n) _____ is a legal agreement that allows multiple users to access the software on a server simultaneously. (a) site license (b) EDI (c) value-added network (d) network license

19. _____ consists of a single copper wire surrounded by at least three layers. (a) Fiber-optic cable (b) Coaxial cable (c) Twisted-pair cable (d) Infrared

20. Data _____ identifies the quality of data. (a) integrity (b) modeling (c) security (d) mining

〈背面繼續〉

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B. Write the detailed answer to each of the following questions. (80%)

1. Explain why the computer software is so important and powerful.

2. The three basic categories of operating systems that exist today are stand-alone, network, and embedded. How are these three operating systems different?

3. Analyze the advantages of organizing data in a database and describe various data models of databases.

4. Convert the postfix expression to infix notation and evaluate the expression with A = 2, B = 5, C = 8, D = 3, E = 10.

   (a) A B C D / / * E A + *

   (b) A B C < C D > ‖ ! && ! C E < ‖

5. Analyze the computing time by Big "oh" notation.

   ```
   for (int i=1; i<=n; i++)
      for (int j=1; j<=i; j++)
         for (int k=1; k<=j; k++)
            x++;
   ```

6. Trace the execution of quick_sort for the sequence {32, 48, 67, 12, 66, 98, 23, 7, 81, 53, 74, 41}. Assume the first item in each subarray is the pivot value.

   (a) How many times is *quick_sort*() called?

   (b) How many times is *partition*() called?

7. Consider the sequence {32, 48, 67, 12, 66, 98, 23, 7, 81, 53, 74, 41}

   (a) Draw the insertion process to construct a binary maximum heap.

   (b) Draw the shrink process to create the array in sorted order.

8. Consider the sequence {32, 48, 67, 12, 66, 98, 23, 7, 81, 53, 74, 41}

   (a) Draw the insertion process to construct a (2, 4) tree.

   (b) Draw the insertion process to construct a red-black tree.