

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

一、選擇題 50 分(每題五分)

1. A _____ is a website that offers a variety of Internet services from a single, convenient location.
(a) LISTSERV (b) microblog (c) portal (d) cache
2. _____ is a small text file that a web server stores on your computer. (a) A pop-under blocker (b) A cookie (c) Adware (d) Spyware
3. A _____ is someone who demands payment to stop an attack on an organization's technology infrastructure.
(a) cyberterrorist (b) script kiddie (c) cracker (d) cyberextortionist
4. _____ are applications that incorporate data from multiple providers into a new application. (a) Plug and Play apps (b) Firmware (c) Mashups (d) DDR2s
5. _____ displays use organic molecules that are self-illuminating and, thus, do not require a backlight.
(a) OLED (b) TFT (c) LED (d) CCFL
6. A selective backup sometimes is called a(n) _____ backup. (a) differential (b) incremental (c) partial (d) archival
7. The technique of swapping items between memory and storage is called _____. (a) thrashing (b) paging (c) spooling (d) buffering
8. The practice used by some ISPs that provides a certain amount of data usage at the optimal speed is known as (a) Bluebugging (b) IP hijacking (c) capping (d) throttling
9. A _____ defines how users view the organization of data in a database. (a) data dictionary (b) data mart (c) data model (d) report writer
10. A(n) _____ is written for mobile devices running a particular mobile phone operating system. (a) native app (b) hybrid app (c) decision support systems (d) expert system

二、非選擇題 50 分

1. (10%) Suppose the expression $X[0, 0]$ referred to the first-row, first-column entry in a two-dimensional array with 5 rows and 7 columns. If the array is stored in column-major order beginning at memory address x and each entry in the array requires n memory cells, what address polynomial would be used to compute the address of the

beginning of the entry $X[i, j]$?

2. (10%) If a typist types sixty words per minute (where a word is considered five characters), how much time would pass between typing each character? If a multiprogramming operating system allocated time slices in 20 millisecond units and we ignore the time required for process switches, how many time slices could be allocated between characters being typed?
3. (10%) At what layer in the TCP/IP protocol hierarchy could a firewall be placed to filter incoming traffic by means of
 - (a) Message content
 - (b) Source address
 - (c) Type of application
4. (10%) The following procedure was designed to compute the largest integer whose square is no greater than N , where N is assumed to be a positive number. (If N is 5, then the procedure should report the value 2.) Find and correct the error.

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procedure squareroot (N)
X ← 0;
while ( $X^2 \leq N$ ) do
  ( $X \leftarrow X + 1$ );
report the value of X
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5. (10%) RSA algorithm—a name chosen to honor its inventors Ron Rivest, Adi Shamir, and Len Adleman. It is a means of encrypting messages using one set of values known as the encrypting keys and decrypting those messages using another set of values known as the decrypting keys.
 - (a) (5%) Use RSA public-key encryption to encrypt the message $(110)_2$ using the public keys $n = 91$ and $e = 5$.
 - (b) (5%) Use RSA public-key encryption to decrypt the message $(111)_2$ using the private keys $n = 133$ and $d = 5$.(e and d will be part of the encryption and decryption process, respectively. $(.)_2$ denotes a binary number.)