

系所組別： 資訊管理研究所乙組

考試科目： 計算機概論

考試日期： 0220 · 節次： 2

※ 考生請注意：本試題 可 不可 使用計算機

## A1. Multiple-Choice Questions (15%)

- i. Moore's Law is a rule that predicts
- A) the access time of the read/write head.
  - B) the speed of the front side bus.
  - C) the pace at which CPUs improve.
  - D) the data transfer rate for a hard drive.
- ii. Most of today's personal computers use \_\_\_\_\_ to represent each letter or character as an 8-bit binary code.
- A) Extended Binary-Coded Decimal Interchange Code
  - B) Unicode
  - C) American Standard Code for Information Interchange
  - D) Binary
- iii. A 3.8-GHz processor performs work at a rate of
- A) 3.8 million machine cycles per minute.
  - B) 3.8 million machine cycles per second.
  - C) 3.8 billion machine cycles per second.
  - D) 3.8 billion machine cycles per minute.
- iv. Which of the following is a single-user, multitask operating system?
- A) Palm OS
  - B) Mac OS
  - C) Symbian OS
  - D) MS-DOS
- v. When you want to extract data from two or more tables, you use a(n) \_\_\_\_\_ query.
- A) select
  - B) join
  - C) relational
  - D) object
- vi. Hyperthreading \_\_\_\_\_ than multi-core technology
- A) is slower
  - B) is faster
  - C) uses a smaller chip
  - D) is better at multitasking

(背面仍有題目,請繼續作答)

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**A2. Basic Concept: (14%)**

- i. Please explain what a machine cycle is (2%) and how the current personal computer processes it. (4%)
- ii. Please translate the string "nCKu" into binary code by using ASCII standard. (ASCII decimal value 'A':65 and 'a': 97) (4%)
- iii. Please use sign-magnitude representation to present '-42' in 1-byte binary format. (4%)

**A3. Database: (12%)**

An airline company would like to build a DB system. The database should record airport, plane and flight information. The airport information includes the airport country, city, and number of Runways. The plane information includes: plane ID, plane type, number of passengers. The Flight records flightID, departure city departure date, arrive city, arrive date and plane ID. We assume that there is only one airport in each city.

- i. Please draw a ER diagram for these descriptions.(4%)
- ii. Please use SQL query to find the Cities from which there are direct flights to Sydney, in alphabetical order (4%)
- iii. The numbers of international flights that leave France on Thursday.(4%)

**A4. Application development (9%)**

System analysis is a key process in system lifecycle. Nowadays, Unified Modeling Language (UML) is the main stream for documentation. Please **name 3 diagrams** officially announced in the UML standard and **explain their purposes briefly**.

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Please select one or more correct description(s) in each of the following questions. To receive the full 4 points, you must select the exactly right numbers as well as the right description items when answering each question. Otherwise, the points will be deducted 1 point for guessing one description item wrong in each question.

B1-1 About podcasts,

- A. another name for a webcast
- B. are updated automatically
- C. enable you to communicate with friends in real time
- D. need a tuning device to listen
- E. use RSS technologies

B1-2 About client/server networks,

- A. are relatively hard to install additional servers
- B. allow users on the server to coordinate file security
- C. have tried to be decentralized
- D. have increased scalability
- E. are more complex than P2P networks

B1-3 About wireless networks,

- A. compared with the firewall, they are more secure
- B. MANs can be one example
- C. set up by using radio waves
- D. their transmission medias must be wireless
- E. used differently from the 802.11 standard

B1-4 About malware,

- A. is a broad term used to refer to software
- B. differs from viruses and worms
- C. has a malicious intent
- D. includes adware as its one form
- E. is regarded as defective software

B1-5 About firewalls,

- A. block access to logical ports
- B. can be instructed
- C. can be configured
- D. thwart most hacking problems
- E. use a network address translation process

(背面仍有題目,請繼續作答)

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B1-6 About network security,

- A. accessing to the Internet is always a privilege to all Internet users
- B. brute force attacks cannot be prevented even right now
- C. cloud computing security has varied dimensions of concerns
- D. VPNs can be a way to build a secure, private network
- E. wireless security policies are seldom implemented

B1-7 About object-oriented programming,

- 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

B1-8 About cloud computing,

- A. almost all services of cloud IaaS are built on servers
- B. can be called as Internet-based computing
- C. cloud PaaS clients pay license fee to deploy cloud applications
- D. cloud SaaS requires clients to run applications on their own computers
- E. scalability can be realized in it

**B2- Fill-in-the-blank questions (18 points; each question 2 points)**

B2-1 Linksys, D-Link, and Netgear are \_\_\_\_\_ devices acting as firewalls.

B2-2 AND, NOT, OR, "" (quotation marks), \* (wildcard), % (wildcard) and combinations of them are all \_\_\_\_\_ operators.

B2-3 <http://www.im.ncku.edu.tw/> is the \_\_\_\_\_ for the Institute of Information Management at the National Cheng Kung University to identify the site's host.

B2-4 802.11g devices have a slower \_\_\_\_\_ (the actual speed of data transfer on a network) than 802.11n devices.

B2-5 Network \_\_\_\_\_ refers to the physical or logical arrangement of technological media, such as Bus, token-ring, and star.

B2-6 Most \_\_\_\_\_ are installed inside technological devices, such as NICs.

B2-7 \_\_\_\_\_ is a process for granting access to a user, who has to provide a password or to pass biometric devices checking.

B2-8 PDAs use PANs to connect wireless devices, such as \_\_\_\_\_ technologies which use radio waves to exchange data over short distances.

B2-9 FTP, HTTP, TCP/IP, SMTP are all \_\_\_\_\_.