

大同大學 九十三年 學年度研究所碩士在職班入學考試試題

考試科目：計算機概論

所別：資訊經營研究所

第 1/3 頁

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

I. (40%) MULTIPLE CHOICE: Select the best possible answer to the question.

- One difference between special-purpose computers and general-purpose computers is that general-purpose computers:
A) are larger B) do several types of jobs C) are more powerful D) are not programmable
- The evolution of computers took place in what order?
A) mini → mainframe → micro C) mainframe → micro → mini
B) micro → mainframe → mini D) mainframe → mini → micro
- In ASCII, the code for "A" is 1000001. What is the ASCII code for "G" ?
A) 1000011 B) 1000111 C) 1001111 D) none of above
- Which of the following cannot be symbolized in the binary notation of computers?
A) speech B) art works C) video D) all can be encoded
- Information must be converted to binary digits for a computer to process it. Information that has been through this process is said to be:
A) symbolized B) compacted C) compressed D) digitized
- One measure of the relative speed of machines which calculates the average number of instructions per second is:
A) microseconds B) ASCII C) megahertz D) MIPS
- Dividing an output screen into a grid of individual pixels is called:
A) bit mapping B) CRT maps C) character mapping D) grid mapping.
- When a program is running in a personal computer, where is its active binary representation physically located?
A) in primary storage B) on a diskette C) in the mouse D) in the bus
- A gigabyte is equal to approximately how many characters?
A) 1,000,000 B) 8,000,000 C) 1,000,000,000 D) 8,000,000,000
- A graphic representation of an algorithm which shows the order in which operations will be performed is:
A) a decision table B) a flowchart C) pseudocode D) a top-down chart
- Which of the following was considered harmful when used in structured programming frequently lead to so-called spaghetti code:
A) sequence B) goto C) selection D) iteration (looping)
- Who proposed that programs be stored in a digital computer's memory?
A) Grace Hopper B) John von Neumann C) Blaise Pascal D) Ada Lovelace
- Finding and correcting programming errors is called:
A) antialiasing B) error tracking C) debugging D) logic tracing
- Which of the following is not a high-level programming language?
A) COBOL B) Pascal C) Assembly language D) Java
- Which of the following is not a type of computer hazard?
A) copy protection B) computer viruses C) Trojan horses D) worms
- A type of computer error in which the programmer types in a command improperly is called a _____ error.
A) syntax B) semantic C) run time D) logic
- The program code that is typed and entered into the computer is called the:
A) object code B) machine code C) source code D) structured code
- The process of "evening up" the right hand margin of a document on a word processor, so that it looks more like typeset text, is called:
A) justification B) proportional spacing C) pitch D) boldfacing
- What is one of the main problems with word processing in character languages?
A) words are not spelled but are ideograms
B) there are thousands more words in languages like Chinese than in English
C) Oriental manufacturers of computers speak English
D) computer developers do not know the frequencies of characters in these languages
- In a spreadsheet, the formula +A3+A4
A) moves the contents of A3 into A4 C) is incorrect because there is no cell name to the left of the plus sign
B) places the sum of A3 and A4 into cell A3 D) writes the sum of A3 and A4 into the cell where the rule is located

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21. The structured English sentence: IF condition THEN value-if-true ELSE value_if_false represented in Excel spreadsheet rule as:
A) =IF(true, condition, false) C) =IF(condition, THEN(value_if_true), ELSE(value_if_false))
B) =condition+true+false D) =IF(condition, value_if_true, value_if_false)
22. One primary use for a spreadsheet is to _____ a real world situation.
A) model B) broaden C) calculate D) search
23. Using a spreadsheet as a prediction device by making changes to data in some cells to see what impact they have on the overall spreadsheet is called:
A) value-added software B) what-if scenario C) using a macro D) dynamic prediction
24. The general term for modern software used to organize, maintain, retrieve, and report multiple databases is a(n):
A) model B) relational database design C) database management system D) object-oriented database program
25. The basic unit of information in a database, such as a name or a phone number, is called a(n):
A) field B) record C) file D) key
26. Which of the following would not be useful as a key field in a large database?
A) social security number B) student number C) date of birth D) all of these are useful
27. What process is fundamental to searching in computer databases?
A) data definition B) Venn diagrams C) primary sorts D) Boolean operations
28. In a database table, the columns are _____ and the rows are _____.
A) key fields, fields B) records, fields C) key fields, records D) fields, records
29. Fax machines are most like which of the following in terms of their scanning technology?
A) CRT screens B) flatbed plotters C) vector graphics screens D) digitizing scanners
30. What is the term used to describe gradations of shadings from white to black when a signal from an RGB graphics board is sent to a monochrome screen?
A) gray lock B) gray scale C) black and white D) monochrome shading
31. What is the difference between paint and draw graphics programs?
A) paint is pixel-based, draw is object-based C) paint works only on color screens, draw works on any type screen
B) draw is pixel-based, paint is object-based D) there is no difference
32. A system that automates the drafting process with interactive computer graphics is called:
A) computer-aided engineering (CAE) C) computer-aided design (CAD)
B) computer-aided manufacturing (CAM) D) computer-aided instruction (CAI)
33. The speed of data transmission over communications lines is measured as the _____ rate, which is expressed in _____.
A) bit, bits per second B) baud, bits per minute C) baud, bits per second D) byte, bytes per minute
34. Transferring a file from a host computer on a network to one's local computer is called:
A) uploading B) licensing C) downloading D) networking
35. The host computer and software that make data available over a network is called a(n):
A) downloading software B) file server C) site license D) value-added network
36. Which of the following was not an original Internet service?
A) the World Wide Web B) Telnet C) FTP D) e-mail
37. What programming language is now used to create small, self-contained applications, called applets, suitable for distribution on the World Wide Web?
A) Java B) Mocha C) HTML D) XML
38. Which of the following is not a security measure on the Internet?
A) copy protection B) encryption software C) public key cryptography D) digital signatures
39. Exploratory methods for solving problems often consisting of ad hoc rules that can be applied in particular situation for automated understanding are called:
A) virtual reality B) heuristics C) knowledge engineering D) production rules
40. Words like "important" and "recent" in a query for "five important, recent books on computers and the economy" can perhaps be handled with principles of:
A) fuzzy logic B) artificial life C) virtual reality D) pattern recognition

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II. (60%) SHORT QUESTIONS:

- (12 %) (1) What is DBMS? (2) Explain the relationship between SQL and a DBMS. (3) Describe and contrast the two database models in use today.
- (8 %) What are the principal functions of TCP and IP? In your town there is a small commercial retail building with essentially one room. On one side of the room is a real estate agency and on the other side of the room is a guy who sells tea. What is the relationship between this setup and the concept of IP addresses with TCP port numbers?
- (10 %) Design (1) an iterative algorithm and (2) a recursive algorithm that prints positive integers in binary form, e.g., 5 → 101. Any programming language or pseudo code is fine!
- (10 pts) Explain the following terms for object oriented programming paradigm: (1) encapsulation (2) information hiding, (3) inheritance (4) polymorphism (5) function overloading.
- (10 pts) Consider part of the grammar below, if we want to modify it to include exponentiation operations of the form X^Y ,
 - $\langle \text{exp} \rangle ::= \langle \text{term} \rangle \mid \langle \text{exp} \rangle + \langle \text{term} \rangle \mid \langle \text{exp} \rangle - \langle \text{term} \rangle$
 - $\langle \text{term} \rangle ::= \langle \text{factor} \rangle \mid \langle \text{term} \rangle * \langle \text{factor} \rangle \mid \langle \text{term} \rangle \text{ DIV } \langle \text{factor} \rangle$
 - $\langle \text{factor} \rangle ::= \text{id} \mid \text{int} \mid (\langle \text{exp} \rangle)$

Which of the following three is/are right? Be sure that exponentiation has higher priority than any other arithmetic operation and is right associated. What are the problems of the one(s) that you think is/are wrong?

- (1) b. $\langle \text{term} \rangle ::= \langle \text{factor} \rangle \mid \langle \text{term} \rangle * \langle \text{factor} \rangle \mid \langle \text{term} \rangle \text{ DIV } \langle \text{factor} \rangle \mid \langle \text{term} \rangle \uparrow \langle \text{factor} \rangle$
 - (2) b. $\langle \text{term} \rangle ::= \langle \text{subterm} \rangle \mid \langle \text{term} \rangle * \langle \text{subterm} \rangle \mid \langle \text{term} \rangle \text{ DIV } \langle \text{subterm} \rangle$
 - b1. $\langle \text{subterm} \rangle ::= \langle \text{factor} \rangle \mid \langle \text{factor} \rangle \uparrow \langle \text{subterm} \rangle$
 - (3) b. $\langle \text{term} \rangle ::= \langle \text{subterm} \rangle \mid \langle \text{term} \rangle * \langle \text{subterm} \rangle \mid \langle \text{term} \rangle \text{ DIV } \langle \text{subterm} \rangle$
 - b1. $\langle \text{subterm} \rangle ::= \langle \text{factor} \rangle \mid \langle \text{subterm} \rangle \uparrow \langle \text{factor} \rangle$
6. (10 pts) (1) Draw a schematic view of DSS (Decision Support Systems). (2) Briefly describe its basic components. (3) What are the major differences between EIS and DSS?