

大同大學 九十五 學年度資工系在職碩士班入學考試試題

考試科目：計算機概論 班別：資工系在職碩士班

第 1/2 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。

Please note that answering in English is encouraged but NOT required for all questions in this test. The questions in I are exceptions and must be answered in English for obvious reason.

I. Spell out the following acronyms. For example, HTTP: Hypertext Transfer Protocol. (20 points)

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|--------|--------|---------|--------|---------|
| 1. POP | 2. OS | 3. RFID | 4. TCP | 5. WWW |
| 6. USB | 7. TFT | 8. FIFO | 9. AI | 10. CPU |

II. Explain the following terminologies. Full points will be rewarded only when the description, not direct translation, is provided. (30 points)

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|--------------------|---------------|-----------------------|
| 1. Web cache | 2. Encryption | 3. Parser |
| 4. Firewall | 5. Modem | 6. DMA |
| 7. Process | 8. Deadlock | 9. Pass by reference |
| 10. Base station | 11. Memory | 12. Tree |
| 13. Authentication | 14. Flowchart | 15. Assembly language |

III. In each of the following questions, select the right answer among the given choices. For each wrong answer, no point will be given and three points will be deducted from your final score. (30 points)

1. What in the following is **not** in the von Neumann model? (1) arithmetic logic unit (2) communication module (3) memory (4) input and output.
2. Which of the following is **not** considered a network topology? (1) bus (2) station (3) mesh (4) ring.
3. What in the following is **not** considered an OS function? (1) program management (2) process management (3) memory management (4) file management.
4. The names of the data units from the transport layer to physical layer are (1) segment, packet, frame, sequence (2) packet, segment, sequence, frame (3) sequence, segment, frame, packet (4) frame, sequence, packet, segment.
5. Which of the following is **not** true regarding the e-mail application? (1) SMTP is used by the user to send e-mails (2) POP is used by the user to receive e-mails (3) both SMTP and POP are pull protocols (4) only POP is a pull protocol.
6. A 'virus' is (1) a biological entity (2) contagious through physical contact (3) prevented by backing system up regularly (4) a malicious software.
7. If 4 bytes are used to address data units of 8 bytes, then the total amount of managed memory is (1) 2^{35} bits (2) 2^{38} bytes (3) about 32G bytes (4) about 64G bits.
8. We convert a Power Point file of numerous graphs into a PDF file. Which statement is correct? (1) Both files are of the same size. (2) The .ppt file is usually smaller. (3) The .ppt file is usually larger. (4) It depends on the situation.
9. What type of testing does the test engineer usually perform? (1) white box testing (2) black box testing (3) incremental testing (4) automated testing.
10. Which aspect of security concerns if the message is altered in the network? (1) nonrepudiation (2) reliability (3) privacy (4) integrity.
11. Which of the following statements about the halting problem is valid? (1) It is unsolvable. (2) It is a polynomial problem. (3) It is a nonpolynomial problem. (4) It may be solvable depending on the parameters.
12. Which of the following factors is the main contributor to network delay variation? (1) queuing delay (2) end-to-end delay (3) transmission delay (4) propagation delay.
13. Which functions are usually **not** carried out in a router? (1) physical layer (2) network layer (3) session layer (4) MAC layer.
14. What can cookies do? (1) improve security (2) save power (3) maximize throughput (4) track users.
15. What does dual core refer to? (1) CPU architecture (2) HD structure (3) motherboard layout (4) memory access method.

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IV. Answer the following questions.

1. (i) Draw the symbols of the logical operators NAND and XOR. (3 points)

(ii) Write the truth table for NOR. (2 points)

2. Write a pseudo code that sorts an array of integers in ascending order. Please use big O to express the order of growth of your code. (5 points)

3. (i) Express -83 in a byte using the sign-and-magnitude format. (2 points)

(ii) Convert 0.874 to a binary of 6 bits. (3 points)

4. We place the n integers in an array to a binary tree. Assume the k -th element in the binary tree is on level h . For example, the first element, i.e., the root, is in level 1. Please express h in k . (5 points)