

# 华南师范大学

软件学院 2019—2020 学年第一学期期末考试

《计算机科学技术导论》试卷样卷

专业\_\_\_\_\_ 年级\_\_\_\_\_ 班级\_\_\_\_\_ 姓名\_\_\_\_\_ 学号\_\_\_\_\_

题号	一	二	三	四	五	总分
得分						

## I. Single Choice Questions (1 point each, 20 points in total)

**(Note: Please help the grader by filling your answers into the table.)**

题号	1	2	3	4	5	6	7	8	9	10
答案										
题号	11	12	13	14	15	16	17	18	19	20
答案										

- A computer is a device. A computing system, by contrast, is a dynamic entity, used to ( ) and interact with its environment.  
A. prepare nicely-formatted documents      B. edit pictures with Photoshop  
C. play computer games      D. solve problems
- Commercial computers in the first generation (from approximately 1951 to 1959) were built using ( ) to store information.  
A. vacuum tubes      B. transistors      C. logic gates      D. circuits
- 2A5 in base 17 is equal to ( ) in base 10.  
A. 2A5      B. 753      C. 758      D. 52E
- Although the terms data and information are often used interchangeably, making the distinction is sometimes useful, especially in computing. ( ) are basic values or facts, whereas information is data that has been organized and/or processed in a way that is useful in solving some kind of problem.  
A. Binary information      B. Analog data  
C. Octal numbers      D. Data
- An octal digit can represent ( ) things.  
A. 1      B. 7      C. 8      D. 10

6. (     ) enables computers to store and transmit alphanumeric information efficiently between one computer and another.
- A. Huffman encoding                      B. Run-length encoding  
C. Keyword encoding                      D. Text compression
7. To describe the behavior of logic gates and circuits, we can create a (     ) showing all possible input values and associated output values.
- A. logic diagram                              B. truth table  
C. Boolean expression                      D. circuit schematic diagram
8. As the organizing force in a computer, the (     ) is in charge of the fetch-execute cycle.
- A. ALU                      B. CPU                      C. control unit                      D. memory
9. (     ) is a software testing approach that designs test cases to ensure that each statement in the program is executed.
- A. Code coverage                              B. Data coverage  
C. Test plan implementation                      D. black-box testing
10. (     ) parallelism is based on increasing the word size of a computer. Increasing the word size reduces the number of operations on data values larger than the word size.
- A. Data-level                      B. Bit-level                      C. Instruction-level                      D. Processor-level
11. A (     ) is data structure that consists of a set of nodes and a set of edges that relate the nodes to each other.
- A. tree                      B. queue                      C. list                      D. graph
12. As a (     ), HTML uses tags to annotate the information in an HTML document, indicating how the information should be displayed.
- A. markup language                              B. high-level programming language  
C. extensible markup language                      D. functional programming language
13. Suppose that an operating system implements paged memory management. Within one of its process, the logical address 3517, with a page size of 1024, can be written as (     ).
- A. <2, 445>                      B. <3, 445>                      C. <3, 425>                      D. <0, 3517>
14. When a running process executes an I/O statement, it will enter the (     ) state.
- A. waiting                      B. running                      C. terminated                      D. ready
15. A computer that passes the Turing test would demonstrate (     ), meaning that the two systems (human and computer) are equivalent in results but do not arrive

at those results in the same way.

- A. strong equivalence                      B. artificial intelligence  
C. human intelligence                      D. weak equivalence
16. Information security can be described as the synthesis of (     ), integrity, and availability – the so-called CIA triad.  
A. confidentiality                      B. accessibility  
C. safety                      D. dependability
17. (     ) are broad, but precise, statements outlining what is to be provided by software product.  
A. Software engineering                      B. Software quality  
C. Software specifications                      D. Software requirements
18. (     ) CPU scheduling distributes the processing time equitably among all processes that are in the ready state. A particular time slice called quantum is established in this approach.  
A. First-come, first-served                      B. Shortest-job-next  
C. Round-robin                      D. Priority-based
19. According to the Huffman encoding scheme in the table below, the word (     ) would be encoded as 1010111110001011.

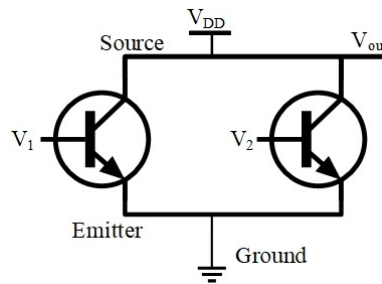
Huffman Code	Character
00	A
01	E
100	L
110	O
111	R
1010	B
1011	D

- A. BREAD                      B. BROAD                      C. DREAD                      D. BLOOD
20. A (     ) is a small text file that a web server stores on your local computer's hard disk. This file is not a program, and it does not execute anything on your computer. However, since it is based on the machine that's making the connection (instead of the person/user), using this technology to personalize user experience does not always work.  
A. spreadsheet                      B. tag                      C. hypertext                      D. cookie

## II. Fill in the Blanks (2 points each, 30 points in total).

- The RGB value (255, 0, 0) represents the \_\_\_\_\_ color.
- 24.375 in decimal is \_\_\_\_\_ in binary.

3. The figure below provides a transistor-based implementation of the \_\_\_\_\_ gate.



4. The signed-magnitude representation of the negative number -62 is \_\_\_\_\_. The 2's complement of the same number is \_\_\_\_\_.
5. If we leverage run-length encoding to compress the string AABBBCCCC, we will get \_\_\_\_\_ and the compression ratio is \_\_\_\_\_.
6. A stack is an abstract composite data structure in which accesses are made at only one end. Adding an item to the stack is called \_\_\_\_\_, while removing an item is termed \_\_\_\_\_.
7. There are three basic disk-scheduling policies, namely \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_, each of which determines, in a different way, the \_\_\_\_\_ in which pending disk requests are processed.
8. A local-area network (LAN) connects a relatively small number of machines in a relatively close geographical area. Three classic topologies of LANs are ring topology, \_\_\_\_\_ topology, and \_\_\_\_\_ topology.

**III. Translate the Following Paragraphs into Chinese (5 points each, 10 points in total).**

1. A semantic network is a knowledge representation technique that focuses on the relationships between objects. A directed graph is used to represent a semantic network. The nodes of the graph represent objects, and the arrows between nodes represent relationships. The arrows are labeled to indicate the types of relationships that exist. Semantic networks borrow many object-oriented concepts, including inheritance and instantiation.
2. Although username and password verification is used for the vast majority of software systems, other authentication techniques do come into play. These range from seemingly insignificant situations, such as posting a comment on a blog, to high-security systems that use multiple levels of authorization. Among emerging alternatives, biometric authentication, a security process relying on unique biological or physiological characteristics of an individual for the purpose of identifying verification, has drawn the attention of the security research community.

#### **IV. Applied Problem (24 points).**

Write down the pseudocode implementation of the Quicksort algorithm and show how the algorithm works with the input sequence 6, 38, 5, 7, 21, 55, 100, 34.

**V. Answer the Following Questions in English or Chinese. (8 points each, 16 points in total).**

1. How does the Web differ from the Internet?
2. Compare and contrast an assembler, a compiler, and an interpreter.