

**一、简答题 (本大题共 10 小题, 每小题 3 分, 共 30 分)。**

提示: 解释每小题所给名词的含义, 若解释正确则给分, 若解释错误则无分, 若解释不准确或不全面, 则酌情扣分。

1. What is an ISA?
2. What is a bus in a computer.
3. What is Moore's Law?
4. What is polling?
5. What is an opcode?
6. What is a bus master?
7. What is a page fault?
8. What is interrupts?
9. State Amdahl's Law in words.
10. What is a protocol?

**二、填空题 (本大题共 10 空, 每空 2 分, 共 20 分)。**

1. Name the three basic components of every computer \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.
2. Cache is accessed by its \_\_\_\_\_, whereas main memory is accessed by its \_\_\_\_\_.
3. Name the four type of I/O control methods \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.
4. Flynn's taxonomy considers two factors. They are \_\_\_\_\_.

**三、判断改错题 (本大题共 5 小题, 每小题 2 分, 共 10 分)**

提示: 正确打✓, 错误打✗, 将其结果填写在下表中。

1. Anything that can be done with software can also be done with hardware, and anything that can be done with hardware can be done with software.
2. The control unit carries out the logic operations and arithmetic operations required during the program execution.
3. A byte is 8 bits, but a word may vary in size (16-bits, 32-bits, etc.) from one architecture to another.
4. The micro-operation is the same thing as a machine instruction.
5. SRAM is often used for cache.

**四、问答题 (本大题共 5 小题, 每小题 6 分, 共 30 分)。**

1. What are the four types of bus arbitration?

2. What is the purpose to use virtual memory?
3. Suppose we have the instruction Load 1000. Given that memory and register R1 contain the values below:

Memory			
1000	1300	R1	200
...			
1100	400		
...			
1200	1500		
...			
1300	1100		
...			
1400	1300		

Assuming R1 is implied in the indexed addressing mode, determine the actual value loaded into the accumulator and fill in the table below:

Mode	Value Loaded into AC
Immediate	
Direct	
Indirect	
Indexed	

4. What are the advantages of using DRAM for main memory?
5. Assume that on a byte-addressable machine, the 32-bit hex value ABCD1234 is stored at address 0. Finish the follow table to show how this hex value stored in memory.

Address	.....► 00	01	10	11
Big Endian				
Little Endian	34			

### 五、计算题 (本大题共 1 小题, 每小题 10 分, 共 10 分)。

提示: 每小题给出了一 7 个程序设计要求, 请按照要求写出源程序代码, 如果源程序代码中出现语法错误或逻辑错误, 则酌情扣分。

1. (共10分) Use Huffman algorithm to create Huffman codes for the following rhyme. Use <ws> for whitespace instead of underscores:

I\_WISH\_I\_MAY\_I\_WISH\_I\_MINGHT\_  
GET\_THE\_WISH\_I\_WISH\_TONIGHT