一、名词解释题（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 SSI, MSI, LSI, and VLSI.

3. What is a bus cycle?

4. What are the four types of bus arbitration?

5. Explain data buses, address buses, and control buses.

6. What is an expanding opcode?

7. What is an address mode?

8. What is a dirty block?

9. State Amdahl's Law in words.

10. What is speedup?

二、填空题（本大题共 10 空，每空 2 分，共 20 分）。 提示：将其结果填写在下表中。

1. Name the three basic components of every computer _____, _____, _____.

2. What unit is typically used to measure the speed of a computer clock _____.

3. What dose the control unit do _____.

4. List the three fields in a set associative cache address _____, _____, _____.

5. Flynn's taxonomy classifies computer architectures based on two properties. 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. The Principle of Equivalence of Hardware and Software supports the claim that it is not possible to build a special purpose computer to perform only word processing.

2. A Hertz is one million cycles per second.

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 faster than DRAM

四、问答题（本大题共 5 小题，每小题 6 分，共 30 分）。

1. What is the function of a CPU?

2. How does direct memory access (DMA) work?

3. Suppose we have the instruction Load 1000. Given that memory and register R1 contain the values

below:

Memory

```
        1400      R1           200
1000
  ...
1100    400
  ...
1200    1000
  ...
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 does Amdahl's Law tell us about performance optimization?

5．Name the four types of I/O architectures. Where are each of these typically used and why are they used there?

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:

STAR_LIGHT_STAR_BRIGHT_
FIRST_STAR_I_SEE_TONIGHT