**第一章**

**问题 1**

The computer has experienced 4 generations, which are (D ).

A. Transistors, SMI, Laser device, Optical medium

B. Vacuum Tubes, Transistors, SSI/MSI circuit, Laser device

C. Vacuum Tubes, Digital tube, SSI/MSI circuit, Laser device

D. Vacuum Tubes, Transistors, SSI/MSI circuit, LSI/VLSI circuit

**问题 2**

The components of CPU do not include ( ).

A. Arithmetic unit B. memory C. register D. controller

**问题 3**

CPU can process information of external memory directly.

A.对 B.错

**问题 4**

MFLOPS is a performance index for express the speed of processing the floating point number.

A.对 B.错

**问题 5**

Although computer science and technology have changed tremendously both in hardware and in software, the basic model for computers has remained essentially the same, which was presented by ( ).

A. Einstein B. Von Neumann C. Edison D. Newton

**问题 6**

In 8-bits micro-computer system, multiplication and division are realized by ( ).

A. dedicated chips B. firmware C. software D. hardware

**问题 7**

Software is equivalent to hardware in logic function.

A.对 B.错

**问题 8**

Resources management of computer software and hardware is the duty of ( ).

A. Operating System B. Language process program

C. Database Management System D. Application program

**问题 9**

The reason of binary representation for information in a computer is it can easily process the information.

A.对 B.错

**问题 10**

The basic feature of Von Neumann computer is (A ).

A. access memory by address and execute instruction in sequence

B. access memory by content

C. Multiple Instruction Stream Single Data Stream (MISD)

D. operate stack

**问题 11**

Data and instructions are stored in ( ) when the program is running.

A. memory B. disk C. datapath D. operating system

**问题 12**

The operating system is appeared in ( ).

A. the 4th generation computers B. the 2nd generation computers

C. the 3rd generation computers D. the 1st generation computers

**问题 13**

The so called “PC” belongs to ( ).

A. Medium computers B. Mainframes C. Micro-computers D. Mini-computers

**问题 14**

Computer hardware consists of calculator, memory, controller and I/O devices.

A

A.对 B.错

**问题 15**

( A) is not belonged to system program.

A. Database system B. Operating system C. Compiler program D. the above all

**问题 16**

The vast majority of computer systems used today are constructed on ( ) computer model.

A. intelligent B. Von Neumann C. parallel D. real time processing

**问题 17**

The use of ( ) signified the development of micro-computer.

A. software B. disk C. Microprocessor D. OS

**问题 18**

The use of microprocessor signified the development of micro-computer.A

A.对 B.错

**问题 19**

The reason why the *binary* system of representation is widely adopted in computer is ( ).

A. computing speed fast B. convenience for information processing

C. saving components D. the restriction of the nature of physical devices

**问题 20**

A full computer should consists of ( ).

A. host and Peripheral B. calculator, memory and controller

C. host and program D. hardware and software system

**问题 21**

Host consists of CPU and I/O devices.B

A.对 B.错

**问题 22**

In a computer based on the von Neumann model, instructions and data are all stored in memory, and CPU distinguish them according their address.

A.对 B.错

**问题 23**

System software is purchased, and applied software is edit by ourselves.B

A.对 B.错

**问题 24**

Which of the following languages can be implemented directly and edited by Mnemonic(助记符): ①Assembly language; ②machine language; ③High-level language; ④Operating system primitives; ⑤Regular language

A. ①, ④ B. ②，① C. ②，⑤ D. ①，③

**问题 25**

In computer terminology, CPU consists of calculator and controller.

A.对 B.错

选择题答案：

1-5.DBBAB 6-10.CAABA 11-15.ACCAA 16-20.BCADD 21-25.BABBA

**第二章**

**问题 1**

If [X] 2’s complement = 0.1101010，then [X]sign-magnitude = ( D )

A. 0.0010110 B. 1.0010110 C. 1.0010101 D. 0.1101010

**问题 2**

( ) is used to represent address in computer.

A. 1’s complement B. unsigned number C. 2’s complement D. sign magnitude

**问题 3**

Numbers X1, X2 are integer, and 【X1】2’s compl = 10011011，【X2】 2’s compl = 00011011, then their true value of decimal form are \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_。

**问题 4**

The sign-magnitude representation of ‘0’ is unique.

A.对 B.错

**问题 5**

Plus two 2’s complement numbers that adopt 1 sign bit, overflow must occur when ( ).

A. carry signal is generated from the sign bit

B. XOR operation for carry signal generated from the sign bit and carry signal generated from the highest numerical bit is ‘0’

C. XOR operation for carry signal generated from the sign bit and carry signal generated from the highest numerical bit is ‘1’

D. XOR operation for carry signal generated from the sign bit and carry signal generated from the highest numerical bit is ‘1’

**问题 6**

The range of representation for a 1’s complement number system of 64 bits (including the sign bit) is ( ).

A. 0≤|N|≤263 – 1 B. 0≤|N|≤262 – 1 C. 0≤|N|≤264 – 1 D. 0≤|N|≤263

**问题 7**

Fixed point number can be classified into pure decimal(纯小数) and pure integer(纯整数).

A.对 B.错

**问题 8**

In fixed point calculator, whether adopted double sign bit or single sign bit, it must has ( ), which is often implemented by ( ).

A. Decoding circuit, NAND gate B. encoding circuit, NOR gate

C. overflow detection circuit, XOR gate D. shift circuit, AND-OR gate

**问题 9**

Arithmetic shift 2’s complement of a positive, sign bit remains unchanged, and the blank bit fills in ‘0’. Arithmetic left shift 2’s complement of a negative, sign bit remains unchanged, and the low bit fills \_\_\_\_\_\_. Arithmetic right shift 2’s complement of a negative, sign bit remains unchanged, and the high bit fills\_\_\_\_\_\_, and truncat low bit.

**问题 10**

Let the word length is 8, the fixed point integer with 2’s complement representation of -1 is \_\_\_\_\_\_\_.

**问题 11**

In fixed point operation, it will be overflow when the result exceeds the represent range of the computer.

A.对 B.错

**问题 12**

For a 8-bit 2’s complement representation integer number, its minimal value is\_\_\_-128\_, its maximal value is\_\_\_127\_\_\_.

**问题 13**

A fixed point number is composed of sign bit and numerical part.

A.对 B.错

**问题 14**

The range of representation for a 2’s complement number system of 16 bits (including the sign bit) is ( ).

A. -215 ~ + (215 -1) B. - (215 –1) ~ + (215 –1) C. -215 ~ + 215 D. - (215 +1) ~ + 215

**问题 15**

8-4-2-1 BCD code of a number is 0111 1000 1001， then its true value is\_\_\_\_\_\_.

**问题 16**

The addition/subtraction algorithm for sign magnitude representation is rather simple.B

A.对 B.错

**问题 17**

Which of the following numbers is odd parity?A

A. 010110011 B. 001000111 C. 110100111 D. 110100111

**问题 18**

The number represented in the computer sometimes will be overflow, the fundamental reason is the limited computer word length.A

A.对 B.错

**问题 19**

For fixed point binary calculator, subtraction is implemented through (B ).

A. 2’s complement binary subtractor B. 2’s complement binary adder

C. sign magnitude decimal adder D. sign magnitude binary subtractor

**问题 20**

In 2’s complement addition/subtraction, using 2 sign bits for overflow detection, when the 2 sign bits ‘S1S2’ equals ‘10’, it means that (C ).

A. result is positive, with no overflow B. result is negative, with no overflow

C. result is overflow D. result is underflow

**问题 21**

The 2’s complement representation of -127 is 10000000.

A.对 B.错

**问题 22**

The minimal number of the following numbers is ( B ).

A. （100101）2 B. （100010）BCD C. （50）8 D. （625）16

**问题 23**

2’s complement representation of ‘0’ equals to 1’s complement representation of ‘-1’.

A.对 B.错

**问题 24**

If [X]2’s complement = 1.1101010，then [X]sign-magnitude = （）

A. 1.0010101 B. 1.0010110 C. 0.0010110 D. 0.1101010

**问题 25**

For sign magnitude representation, 1’s complement representation, 2’s complement representation,\_\_\_\_\_ and\_\_\_\_\_has 2 representations of ‘0’.

**问题 26**

The use of 2’s complement operation is adopted to simplify the design of computer.

A.对 B.错

**问题 27**

Fixed point calculator is used for ( ).

A. fixed point operation B. floating point operation

C. fixed point operation and floating point operation D. decimal addition

**问题 28**

When -1<x<0, [x]sign-magnitude = （）

A. 1-x B. (2-2-n)-|x| C. 2+x D. x

**问题 29**

The maximal number of the following numbers is ( ).

A. （227）8

B. （96）16

C. （10010101）2

D. （143）5

**问题 30**

8-4-2-1 code is binary number.

A.对 B.错

**问题 31**

A decimal number is 137.5, then its octal form is \_\_\_\_\_, its hexadecimal form is\_\_\_\_\_.

**问题 32**

For a additiont 1’s complement representation integer number, its minimal value is\_\_\_\_\_\_, its maximal value is\_\_\_\_\_.

**问题 33**

The （）representation of ‘0’ is unique.

A. sign magnitude and 1’s complement

B. 1’s complement

C. 2’s complement

D. sign magnitude

**问题 34**

The range of representation for a unsigned binary number system of 16bits is\_\_\_\_\_\_~\_\_\_\_\_.

**问题 35**

Given 【x1】 2’s compl =11001100， 【x2 】sign mag =1.0110, the decimal value of x1 and x2 are

\_\_\_\_\_ and \_\_\_\_\_.

答案：1-2.DB 3. -101 27 4-8.BCAAC 9. 0 1 10.10000000

11.A 12. -128 127 13-14.BA 15.789 16-20.BAABC

21-24.BBBB 25. sign magnitude representation 1’s complement representation

26-30.AAAAB 31. 211.4 89.8 32. -127 127 33.C

34. 0~65535 35. -52 -0.375

**第五章**

**问题 1**

Calculator has many components, but data bus is the key part.

A.对 B.错

**问题 2**

In an adder, the carry generate variable (G) of bit ‘i’ is ( ).

A. Xi⊕Yi

B. Xi·Yi·Ci

C. Xi＋Yi＋Ci

D. Xi·Yi

**问题 3**

The carry look-ahead circuit chip 74182 realizes the carry logic between groups in parallel.

A

A.对 B.错

**问题 4**

The subtraction algorithm of fixed point binary is realized by ( ).

A. subtraction for sign magnitude representation

B. addition for binary code decimal

C. addition for 2’s complement representation

D. subtraction for 2’s complement representation

**问题 5**

The main function of ALU is ( ).

A. arithmetic operation

B. only addition operation

C. logic operation

D. logic and arithmetic operation

**问题 6**

In a ripple-carry adder, the key factor affecting the speed of the adder is ( ).

A. Gate-level delay

B. speed of components

C. various speed of each full adder for bit i

D. carry propagation delay

**问题 7**

A calculator consists of many components, but the key component of calculator is ( ).

A. arithmetic and logic unit

B. data bus

C. accumulate register

D. multi-switch

**问题 8**

An arithmetic-logic unit is the heart of the CPU, and it belongs to ( ).

A. controller

B. register

C. [sequential](http://dict.cn/sequential) [logical](http://dict.cn/logical) [circuit](http://dict.cn/circuit)

D. [combinational](http://dict.cn/combinational) [logic](http://dict.cn/logic) [circuit](http://dict.cn/circuit)

**问题 9**

The commercial ALU chip 74181 is a 4-bit parallel adder with carry look-ahead circuit.

A

A.对 B.错

**问题 10**

ALU usually has a ripple-carry adder in order to improve the speed.

A.对 B.错

**问题 11**

The commercial 4-bit ALU chip 74181 can only perform 16 different arithmetic operations.

B

A.对 B.错

**问题 12**

4-bit Arithmetic Logic Unit 74181 can perform (D ).

A. 16 possible logic operations

B. 16 different arithmetic operations

C. 4-bit multiplication/division operations

D. 16 different arithmetic operations or 16 possible logic operations

**问题 13**

ALU belongs to ( ).

A. calculator unit

B. control unit

C. memory

D. register

**问题 14**

Using four 74181ALU chips and one 74182CLA chip can achieve the following carry propagation circuit: (A ).

A. carry look-ahead of all 16 bits

B. ripple carry inside each 4-bit group and carry look-ahead across different groups

C. ripple-carry circuit

D. carry look-ahead inside each 4-bit group and ripple carry across different groups

**问题 15**

In an adder, the carry propagation variable (P) of bit ‘i’ is (D ).

A. Xi⊕Yi

B. Xi·Yi·Ci

C. Xi＋Yi

D. Xi·Yi

选择题答案：

1-5.BDACD 6-10.DADAB 11-15.BDAAD

**第六章**

**问题 1**

Exponent unit in floating point calculator can realize addition, subtraction, [multiplication](http://dict.cn/multiplication) and division operations.

A.对 B.错

**问题 2**

In addition/subtraction operation on two floating point numbers, x＝Mx·2Ex and y＝My·2Ey, it requires exponent equalization before arithmetic operation. If Ex>Ey, shift\_\_\_\_\_; if Ex<Ey, shift

\_\_\_\_\_; if Ex=Ey, no shift.

**问题 3**

The mantissa of floating point number uses 2’s complement representation, the binary code of the mantissa before normalization is 1.10101. It needs \_\_\_\_ normalization, and it should shift\_\_\_\_bit.

**问题 4**

(        ) representation is used in mantissa of floating point number.

A. biased code or excess-2q code B. sign magnitude

C. 2’s complement D. 1’s complement

**问题 5**

In the representation of floating point numbers, （        ）is implicit(隐含)

A.exponent B. the radix of the number system to represent the mantissa

C. mantissa D. sign bit

**问题 6**

For a IEEE 754 standard Floating-Point number, its mantissa uses ( ) representation.

A. biased code or excess-2q code B. 1’s complement

C. operating system is appeared widely D. 2’s complement

**问题 7**

Which of the followings is correct:

A. Exponent unit can realize addition, subtraction, [multiplication](http://dict.cn/multiplication) and division operations.

B. Mantissa unit only realize [multiplication](http://dict.cn/multiplication) and subtraction operations.

C. Exponent unit only realize addition and subtraction for exponent.

D. Floating point calculator can be implemented by exponent and mantissa units.

**问题 8**

The maximal positive number in IEEE754 standard for 32-bits format is （B）

A. +（2 – 2-23）×2+255 B. +（2 – 2-23）×2+127

C. +（1 – 2-23）×2+127 D. 2+127 + 227

**问题 9**

Exponent unit in floating point calculator can realize operations of addition, subtraction and compare.

A.对 B.错

**问题 10**

Which is normalized Floating-Point number, if its mantissa is represented by 2’s complement format?

A. 0.01110 B. 1.00010 C. 0.01010 D. 1.11000

**问题 11**

In IEEE 754 standard, a floating point number is composed of sign bit s, exponent e, and mantissa m.

A.对 B.错

**问题 12**

The sign bit ‘1’ of a biased code number represents the number for\_\_\_\_\_\_, while ‘0’ represents the number for\_\_\_\_\_.

**问题 13**

In IEEE754 standard floating point, [mantissa](http://dict.cn/mantissa) is coded as\_\_\_\_, exponent is coded as\_\_\_\_\_.

**问题 14**

In IEEE 754 standard, the value of exponent is represented in excess-128 code.

A.对 B.错

**问题 15**

In a algorithm for [normalized](http://dict.cn/normalized) float-point number, a number is 25×1.10101, with 2’s complement representation for mantissa. Then it (        ).

A. needs left shift 2 bits of mantissa for normalized B. needs left shift 1 bit of mantissa for normalized.

C. needs no normalized D.needs right normalized

**问题 16**

The exponent, E, of a floating point number usually uses biased code representation, which is more convenient for comparing size or exponent equalization.A

A.对 B.错

**问题 17**

The mantissa of a Floating-Point number is represented by 2’s complement, then whether the Floating-Point number is normalized is decided by ( C ).

A. mantissa’s sign bit and the first bit of mantissa’s numerical part are identical

B. the sign bit of exponent and mantissa are identical

C. mantissa’s sign bit and the first bit of mantissa’s numerical part are different

D. the sign bit of exponent and mantissa are different

**问题 18**

In the representation of floating point numbers, \_\_\_\_\_\_ is implicit and invisible to the computer hardware.

**问题 19**

The purpose of using normalized floating point number is ( ).

A. to expand the range of data representation B.to avoid for overflow

C. convenient for floating point operation D. to ensure maximum accuracy of representation

**问题 20**

(        ) representation is used in exponent of Floating-Point number.

A. biased code or excess-2q code B. 1’s complement

C. sign magnitude D. 2’s complement

1.B 2. My Mx 3. left 1 4-10.BBCDBA

11.A 12. 非负数 负数 13.原码 移码 14-15.BB

16-17.AC 18.基数 19-20.DA

**第七章**

**问题 1**

Indirect addressing mode is designed to facilitate the access of data arrays.

|  |
| --- |
| 问题 1 答案A.对 B.错 |

**问题 2**

Instruction set is a key factor to represent the performance of a computer.

问题 1 答案A.对 B.错

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |

**问题 3**

Register-Register (RR) addressing mode is slower than Register-Storage (RS) addressing mode.

问题 1 答案A.对 B.错

|  |  |
| --- | --- |
|  |  |
|  |  |

**问题 4**

The function of program control instructions is （ ）.

|  |  |
| --- | --- |
| A. | to perform arithmetic and logic operations |
| B. | to move data between I/O and CPU |
| C. | to move data between memory and CPU |
| D. | to change the program executing order |

**问题 5**

According to storage position of operand, the instruction set usually supports SS addressing mode.

A.对 B.错

|  |  |
| --- | --- |
|  |  |
|  |  |

**问题 6**

An instruction word consists of Opcode and addresses part.

A.对 B.错

**问题 7**

Format and function of instruction set only affect the hard structure of a computer.

A.对 B.错

|  |  |
| --- | --- |
|  |  |
|  |  |

**问题 8**

In register indirect addressing mode, the operand is in ( ).

|  |  |  |
| --- | --- | --- |
|  | A. | PC |
|  | B. | stack |
|  | C. | memory |
|  | D. | general register |

**问题 9**

The operand is in a register, this addressing mode is called （ ）.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A. | | | | register direct addressing mode |
| B. | | | | direct addressing mode |
| C. | | | | indirect addressing mode |
| D. | | | | register indirect addressing mode |
|  |  |  |
|  |  |  |
|  |  |  |

**问题 10**

The address part in a program control instruction represents the address of next instruction that needs transfer.

A.对 B.错

|  |  |
| --- | --- |
|  |  |
|  |  |

**问题 11**

In the instruction addressing modes the fastest way to get the operand is ( ).

|  |  |
| --- | --- |
| A. | register addressing mode |
| B. | direct addressing mode |
| C. | indirect addressing mode |
| D. | immediate addressing mode |

**问题 12**

In order to implement arithmetic operation between two operands for one-address instruction, one operand is indicated by addresses part of instruction, another operand is specified by ( ).

|  |  |
| --- | --- |
| A. | immediate addressing mode |
| B. | implied addressing mode |
| C. | stack addressing mode |
| D. | indirect addressing mode |

**问题 13**

By using different addressing mode, the instruction set can ( ).

|  |  |
| --- | --- |
| A. | reduce the instruction length, expand addressing space, improve programming flexibility |
| B. | realize program store and program control |
| C. | access external storage directly |
| D. | extend OPcode and decrease the trouble of instruction decoding. |

**问题 14**

For the number of instructions, addressing mode and instruction kinds, RISC is less than CISC.

A.对 B.错

|  |  |
| --- | --- |
|  |  |
|  |  |

**问题 15**

There are two instruction addressing modes, one is sequential, and the other is jump. Jump addressing mode can perform ( ).

问题 15 答案

|  |  |
| --- | --- |
| A. | conditional branch of program |
| B. | conditional or unconditional branch of program |
| C. | unconditional branch of program |
| D. | stack addressing |

**问题 16**

The purpose of using extending Opcode in instruction format is （ ）.

|  |  |
| --- | --- |
| A. | to keep the length of instructions, while increase the addressing space |
| B. | to increase the length of instructions |
| C. | to keep the length of instructions, while increase the kinds of instruction operate |
| D. | to reduce the length of instructions |

**问题 17**

Which instruction has the maximal execution time（ ）?

|  |  |
| --- | --- |
| A. | Program control instructions |
| B. | RS instructions |
| C. | SS instructions |
| D. | RR instructions |

**问题 18**

Let the valid address of operand is given in the address part of instruction, then the instruction adopts ( ).

|  |  |
| --- | --- |
| A. | immediate addressing mode |
| B. | indirect addressing |
| C. | register direct addressing mode |
| D. | direct addressing mode |

**问题 19**

OPcode in an instruction gives the character and function of the instruction.

A.对 B.错

|  |  |
| --- | --- |
|  |  |
|  |  |

**问题 20**

Instruction addressing mode is the way that form the address of instruction.

|  |  |
| --- | --- |
|  |  |
|  |  |

A.对 B.错

选择题答案：1-5.BABDB 6-10.ABCAA 11-15.DBAAB 16-20.CCBAA

**第八章**

**问题 1**

According to the generation mode of control signal, controller can be divided into\_\_\_\_\_and\_\_\_\_\_.

**问题 2**

Counter can be used not only for counting pulse, but also used for frequency divider(分频) and timer(定时器).

A.对 B.错

**问题 3**

The function of direct branch instruction is to transfer the address code of instruction into ( ).

A. accumulator B. PC C. address register D. memory

**问题 4**

Status register store the result of arithmetic operation.

A.对 B.错

**问题 5**

In CPU, decoder is used for decode of instruction, addressing mode and address of operand.

A.对 B.错

**问题 6**

The speed of a computer is related to frequency, and is also related to word length, computer architecture, etc.

A.对 B.错

**问题 7**

Which of the following statements for RISC is correct: ( ).

A. RISC must be pipeline CPU

B. RISC is not necessary pipeline CPU

C. RISC has complex instruction system

D. CPU uses fewer general registers

**问题 8**

In a computer, memory and registers can all store data

A.对 B.错

**问题 9**

The cycle of CPU frequency is（ ）.

A. machine Cycle B. read/write cycle C. clock cycle D. instruction cycle

**问题 10**

A CPU consists of （ ）.

A. controller, ALU and memory B. controller

C. calculator and memory D. controller, ALU, registers and cache

**问题 11**

In CPU the register pointing to the next instruction to be fetched is ( ).

A.PSW B.PC C.MAR D.IR

**问题 12**

In CPU, the register for pointing the next instruction is MAR.

A.对 B.错

**问题 13**

The bits length of registers in CPU is decided by（ ）.

A. instruction length B. machine word length C. memory size D. pins of CPU

**问题 14**

An instruction cycle is composed of some T cycles.

A.对 B.错

**问题 15**

Controller implementation by hardwire is also called（ ）.

A. store logic controller B. calculator

C. combinational logic controller D. micro programmed controller

**问题 16**

|  |  |
| --- | --- |
| Intel 80486 is a 32 bits processor, while Pentium is（ ）bits processor. |  |

A.16 B.64 C.32 D.48

**问题 17**

A CPU at least has 6 kinds of register, which are \_\_\_\_\_,\_\_\_\_\_,\_\_\_\_\_,\_\_\_\_\_ general register and status register.

**问题 18**

PC (program counter) belongs to ( ).

A. memory B. ALU C. I/O D. controller

**问题 19**

In CPU, the register storing the current instruction being executed is\_\_\_\_\_\_\_，pointing to the next instruction to be fetched is\_\_\_\_\_\_.

**问题 20**

Generally, serial register has the function of shift operation.

A.对 B.错

**问题 21**

The register used to store the current instruction being executed is IR.

A.对 B.错

**问题 22**

In CPU, register\_\_\_\_ is used to store the memory address during READ/WRITE operations. Register\_\_\_\_\_\_ is used to store the status bits as the result of execution of arithmetic, logic and testing instruction.

**问题 23**

CPU does not includes ( ).

A. MAR B. address decoder C. IR D. instruction decoder

**问题 24**

If the frequency of a computer is the highest, then its speed is the fastest.

A.对 B.错

**问题 25**

For a **n-bit** CPU, n means\_\_\_\_\_

答案：

1.硬布线控制器 微程序控制器 2-5.ABBA

6-10.AAACD 11-15.BBBBC 16.B 17.IR PC AR MBR

18.D 19.IR PC 20.A

21.A 22.MAR SR 23-24.BB 25.字长

**第九章**

**问题 1**

Which unit is responsible for decode ( ).

A. controller B. calculator C. memory D. ALU

**问题 2**

In micro programmed controller, control unit send control signals to execute unit, the control signals are called ( ).

A. micro commands B. micro operations C. micro program D. micro instructions

**问题 3**

Each machine instruction is interpreted and executed by a microcode consisting of a sequence of microinstructions.

A.对 B.错

**问题 4**

The function(s) of control unit is(are) ( ).

A. to fetch an instruction from memory B. to decode the OPcode of an instruction

C. to generate sequential signals

D. to fetch instruction from memory and decode and generate corresponding control signals and execute

**问题 5**

The instruction cycle for all the operations is the same.

A.对 B.错

**问题 6**

Mutually exclusive micro-operations are the operations that cannot execute parallel in a CPU cycle.

A.对 B.错

**问题 7**

In micro programmed controller, the relationship between machine instruction and micro instruction is:

A. each machine instruction is interpreted and executed by micro- program which constitutes of some micro instructions

B. a micro instruction is composed of some machine instruction

C. each machine instruction is executed by one micro instruction

D. a program constitutes of some machine instructions can be implemented by a micro instruction.

**问题 8**

CPU cycle is also called clock cycle. A CPU cycle consists of some machine cycles.

A.对 B.错

**问题 9**

The mirco-commands of a micro-instruction is mutually exclusive, then ( ).

A. they are fault-tolerance B. they can replace each other

C. they can appear in the same time D. they cannot appear in the same time

**问题 10**

Processer adopts micro programmed controller is called micro processer.

A.对 B.错

**问题 11**

Instruction cycle is the time that CPU fetches an instruction from memory and executes it.

A.对 B.错

**问题 12**

Every instruction cycle needs at least 2 CPU cycles.

A.对 B.错

**问题 13**

Micro-program utilizes software method to design the control operations.

A.对 B.错

**问题 14**

Instruction cycle is（ ）.

A. the time for reading and executing an instruction B. the time for executing an instruction

C. the time for reading an instruction from memory D. clock cycle

**问题 15**

The basic idea of multiple transfer for fetch the address of the next micro-instruction is（ ）.

A. using PC B. using μPC

C. using judge field(控制字段) of μPC D. using a specific field in instruction

**问题 16**

Machine cycle is defined by（ ）.

A. the minimal time for reading an instruction word from memory

B. the average time for writing a data word to memory

C. the maximal time for reading a data word from memory

D. the average time for reading a data word to memory

**问题 17**

Comparing to micro-program controller, hardwired controller are:

A. low in execution, hard for modify and extend of instruction function.

B. fast in execution, easy for modify and extend of instruction function.

C. fast in execution, hard for modify and extend of instruction function.

D. low in execution, easy for modify and extend of instruction function.

**问题 18**

Instruction cycle is also called CPU cycle.

A.对 B.错

**问题 19**

Micro-programs are stored in（ ）.

A. control memory B. main memory C. RAM D. IR

**问题 20**

The hardwired controller run low and it is hard to modify and extend.

A.对 B.错

答案：

1-5.AAADB 6-10.AABDB 11-15.AAAAC 16-20.ACBAB

**第十章**

**问题 1**

Fast cache memory is designed such that the main memory appears faster to the processor than it actually is.

A.对 B.错

**问题 2**

There are four 16K\*8bit storage chips, then these chips can form a \_\_\_\_\_\*16bit memory module.

**问题 3**

The purpose of [hierarchical](http://dict.cn/hierarchical) structure in a computer memory system is: ( ).

A. easy to store huge data B. to reduce the volume of the computer

C. easy to operate D. to solve the [contradictory](http://dict.cn/contradictory) between capacity, speed and price.

**问题 4**

Let the word length of a computer is 32 bit, the capacity of the memory is 4MB. If the memory is addressed by half word, then its addressing space is\_\_\_\_\_\_\_.

**问题 5**

Set-associative mapping scheme between main memory and cache is high [flexibility](http://dict.cn/flexibility), high hit ratio and low cost.

A.对 B.错

**问题 6**

A SRAM chip is organized as 64K×16bit，then its address length is\_\_\_\_\_\_, its word length is\_\_\_\_\_\_.

**问题 7**

In virtual memory, ( ) is responsible for address mapping.

A. load program B. programmer C. operating system D. complier

**问题 8**

Cache is a part of Memory, it can be accessed directly by instruction.

A.对 B.错

**问题 9**

Refresh mode of DRAM are three ways that are [centralization](http://dict.cn/centralization), [distributed](http://dict.cn/distributed) and asynchronous.

A.对 B.错

**问题 10**

Memory is used to store（ ）

A. data B. micro-program C. program D. data and program

**问题 11**

The memory system for a computer is:

A. primary memory B. cache, main memory and secondary storage

C. RAM D. ROM

**问题 12**

Using 16K\*1bit memory chips to form 64K\*8bit main memory module. It need expand \_\_\_\_\_ times in word, expand\_\_\_\_ times in bit.

**问题 13**

Associative memory is accessed by address, and it is used for block table in cache.

A.对 B.错

**问题 14**

Let word length of a computer is 32 bit, the capacity of the memory is 64MB. If the memory is addressed by word, then its range of addressing is\_\_\_\_\_~\_\_\_\_\_.

**问题 15**

The purpose of virtual memory is: ( ).

A. to expand the capacity of secondary storage

B. to increase speed for access to secondary storage

C. to expand the capacity of primary memory

D. to increase speed for access to primary memory

**问题 16**

The purpose of setting a cache between CPU and primary memory is: （ ）

A. to expand the capacity of primary memory

B. to balance the speed between CPU and primary memory

C. to expand the number of registers in CPU

D. to expand both of the capacity of primary memory and the number of registers in CPU

**问题 17**

Associative memory is a memory addressing by:

A. address B. address and stack C. stack D. content

**问题 18**

SRAM is faster than DRAM, but its Integration is lower.

A.对 B.错

**问题 19**

CPU could not access directly to :

A. cache B. primary memory C. hard disk D. register

**问题 20**

A DRAM is organized as 512K×8bit, it has\_\_\_\_\_ address pins,\_\_\_\_\_\_ data pins.

**问题 21**

In multi-level hierarchical structure of a computer memory system,\_\_\_\_\_ is the fastest,\_\_\_\_\_ is the lowest.

**问题 22**

Commonly the virtual memory is composed of（ ）, which is a two level storage structure.

A. memory-secondary storage B. general register-primary memory

C. cache- secondary storage D. cache-primary memory

**问题 23**

A fully associative cache has high hit ratio and low cost.

A.对 B.错

**问题 24**

Address mapping functions between main memory and cache use full-associative mapping scheme, direct mapping scheme and set-associative mapping scheme.

A.对 B.错

**问题 25**

A direct-mapped cache has high hit ratio and low cost.

A.对 B.错

**问题 26**

16 storage chips of 2K\*4 bit can form a \_\_\_\_\*16bit memory module.

**问题 27**

A RAM is organized as 512×8bit, besides power supply and ground terminal, the minimal pins number of the chip is\_\_\_\_\_.

**问题 28**

Multi-level hierarchical structure for a computer memory system is used to solve the speed bottleneck of memory.

A.对 B.错

**问题 29**

In a computer system, all the following units can store information：①Primary memory; ②general registers in CPU; ③cache ④magnetic tape ⑤disk. According to access speed, the order by fast to low is \_\_\_\_, Main memory includes\_\_\_\_\_\_; Secondary memory includes ④⑤

**问题 30**

Dual-port memory can operate r/w in a fast way. That is because it adopts

A. high speed chip B. two separate read/write circuit

C. new type device D. assembly line

**答案**：

1.A 2. 32 3.D 4. 0-2M 5.A 6. 16 16 7-10.CBAD

11.B 12. 4 8 13.B 14. 0 16 15.C 16-19.BDAC 20. 19 8

21. 通用寄存器 磁带 22-25.ABAB 26. 8K 27. 19 28.B 29. ②③①⑤④ ①③ 30.B

**计算题**

**问题 1**

Let the carry bits of an adder are C4, C3, C2, C1. C0 is the carry from the low bit. Please give the logic expressions of C4, C3, C2, C1 in ripple carry mode and carry look ahead mode respectively.

（1）串行进位方式：

C1 = G1 + P1 C0 其中： G1 = A1 B1 ，P1 = A1⊕B1

C2 = G2 + P2 C1 G2 = A2 B2 ，P2 = A2⊕B2

C3 = G3 + P3 C2 G3 = A3 B3 , P3 = A3⊕B3

C4 = G4 + P4 C3 G4 = A4 B4 , P4 = A4⊕B4

(2) 并行进位方式：

C1 = G1 + P1 C0

C2 = G2 + P2 G1 + P2 P1 C0

C3 = G3 + P3 G2 + P3 P2 G1 + P3 P2 P1 C0

C4 = G4 + P4 G3 + P4 P3 G2 + P4P3 P2 G1 + P4 P3 P2 P1 C0

其中 G1—G4 ，P1—P4 表达式与串行进位方式相同。

**问题 2**

IEEE 754 format of X is (41360000)16, what is its decimal value?

解：将十六进制数展开，可得二进制数格式为：

0 100 0001 0 011 0110 0000 0000 0000 0000

* + 指数e=阶码－127=10000010－01111111= 00000011 =（3）10
  + 包括隐藏位1的尾数1.*M* = 1.011 0110 0000 0000 0000 0000 = 1.011011

于是有：X = (-1)s \* 1.M \* 2e = +(1.011011)2 \* 23 = + (1011.011)2 = (11.375)10

**问题 3**

Given a decimal number 20.59375, represent it as a normalized single-precision floating-point number in IEEE 754 standard format

* 首先分别将整数和分数部分转换成二进制数： 20.59375 = 10100.10011
* 然后移动小数点，使其在第1，2位之间

10100.10011＝=1.010010011\*24　　　　*e*＝4

* 于是得到：

*S*＝0， *M*＝010010011

*E*＝e+127 = 4+127 = 131 = 1000 0011

* 二进制表示：

0100 0001 1010 0100 1100 0000 0000 0000 （41A4C000）16

**问题 4**

Suppose a computer with a clock frequency of 100 MHz as four types of instructions, and the frequency of usage and the CPI for each of them are given in table.

|  |  |  |
| --- | --- | --- |
| Instruction operation | Frequency of usage | Cycles per instruction |
| Arithmetic-logic | 40% | 2 |
| Load/store | 30% | 4 |
| compare | 8% | 2.5 |
| branch | 22% | 3 |

(1) Find the MIPS of the computer and the T (CPU time) required to run a program of 107 instructions.

(2) Combining comparing and branch instructions together so that compare instructions can be replaced and removed. Suppose each compare instruction was originally used with one branch instruction, and now each branch instruction is changed to a compare&branch instruction. Also suppose that the new proposal would decrease the clock frequency by 5%, because the new compare&branch instruction needs more time to execute. Find the new CPIave, MIPS, and T.

解：(1).CPIave = (0.4\*2 + 0.3\*4 + 0.22\*3)/0.92 = 2.66/0.92 = 2.9

MIPS = f(MHz)/CPIave = (100\*95%)/2.9 = 32.76

(2).T = IC×CPIave/ f(Hz) = (0.92\*107 ) \*2.9/(0.95\*100\*106) = 0.28s

**问题 5**

**Given**: x= 0.1011，y = - 0.0101

**Ask:** [ 1/2 x] 2’s compl，[1/4 x] 2’s compl，[ - x ] 2’s compl，[1/2 y] 2’s compl，[1/4 y] 2’s compl，[ - y ] 2’s compl

解： [ x ]补 = 0.1011 ， [ y ]补 = 1.1011

[x ]补 = 0.01011 ， [y ]补 = 1.11011

[x ]补 = 0.001011 ，[ y ]补 = 1.111011

[- x ]补= 1.0101 ， [- y ]补=0.0101

**设计题**

**问题 1**

CPU has 16 address bus lines (A15-A0), 8 data bus lines (D7-D0), R/W (high level represents Read, while low level represents Write), MREQ control line for accessing memory (low level represents accessible).

Memory space allocation: The minimal 4K are used for system program, which is composed of Read Only Memory chip; the following 4K are used for user program; the last 16K are used for system working.

Questions:

(1) As shown in figures, select appropriate chips to form the required memory space. Which chips are needed? How many chips are needed? Descript the corresponding data bus length, address bus length and control bus line.

(2) Descript the address distribution of memory.

(3) Descript select chip logic functions (片选逻辑函数) of each chip.

(4) Descript the connection way among 74LS138, CPU and memory chips.

**问题 2**

We use 16M\*8bit memory chip to form a 64M\*16bit main memory module. Required that the capacity of storage be expand, the access time be reduced.

Questions:

(1) How many 16M\*8bit memory chips should be used?

(2) Give the address length of each memory chip and address length of main memory module.

(3) Descript select chip logic functions (片选逻辑函数) of each chip.

Descript the connection way among encoder, CPU and memory chips.

(4)For an address (2345678)16, give its body number and address inside the body.

**问题 3**

1. CPU has 16 address bus lines (A15-A0), 8 data bus lines (D7-D0), R/W (high level represents Read, while low level represents Write), MREQ control line for accessing memory (low level represents accessible).

Memory space allocation: The minimal 8K are used for system program, which is composed of Read Only Memory chip; the following 24K are used for user program; the last 2K are used for system working.

Now we have: EPROM 8K \* 8 (contains CS control line only);

SRAM 16K\*1, 2K\*8, 4K\*8, 8K\*8; Decoder 74LS138;

and other logic gates

Questions:

(1) Select appropriate chips to form the required memory space. Which chips are needed? How many chips are needed? Descript the corresponding data bus length, address bus length and control bus line.

(2) Descript the address distribution of memory.

(3) Descript select chip logic functions (片选逻辑函数) of each chip.

(4) Descript the connection way among CPU, memory chips and 74LS138.

解：（1）根据给定条件，选用

EPROM：8K×8位芯片1片，其地址线13根，数据线8根，片选控制信号CS，无读写控制信号。

SRAM： 8K×8位芯片3片，地址线13根，数据线8根，片选控制线号CS，读写控制线号R/W；2K×8位芯片1片，地址线11根，数据线8根，片选控制线号CS，读写控制线号R/W。

（2）A15 A14 A13 A12 A11 A10 A9 A8 A7 A6 A5 A4 A3 A2 A1 A0

CS0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

8K 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1

CS1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0

8K 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­

CS2 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0

8K 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1

CS3 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0

8K 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­CS4 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0

2K 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­

(3) CS0 = (A15’\*A14’\*A13’)’ = Y0’

CS1 = (A15’\*A14’\*A13)’ = Y1’

CS2 = (A15’\*A14\*A13’)’ = Y2’

CS3 = (A15’\*A14\*A13)’ = Y3’

CS4 = (((A15\*A14\*A13)’)’\*(A12\*A11))’ =( (Y1’)’\*A12\*A11)’

(4) 数据总线：由于选择的存储芯片数据总线与CPU数据总线都是8位，因此不需要进行扩展，一一对应D7~D0相联即可。 地址总线：系统程序区使用EPROM 8K容量，所以CPU的A12~A0链接到EPROM的片内地址总线A12~A0，CPU的A15~A13地址线经过74LS138译码，输出Y0连接到EPROM的片选；

用户程序区使用3片SRAM 各8K容量，所以CPU的A12~A0链接到SRAM的片内地址总线A12~A0，CPU的A15~A13地址线经过74LS138译码，输出Y1、Y2、Y3分别连接到3片SRAM的片选。

系统工作区使用SRAM 2K容量，所以CPU的A10~A0链接到SRAM的片内地址总线A10~A0，CPU的A15~A13地址线经过74LS138译码，输出的Y7取反，与A12、A11相与，再取反连接到2K的SRAM片选。