1.Address 6 分

2.9 每個 3 分(Mass storage, main memory and general-purpose registers)

General-purpose registers are used to hold the data immediately applicable to the operation at hand;

main memory is used to hold data that will be needed in the near future;

mass storage is used to hold data that will likely not be needed in the near future.

3. 9 分每題 1 分

A	00001011
B	10000000
C	00101101
D	11101011
E	11101111
F	11111111
G	11100000
H	01101111
I	11010010

4. 8 每個兩分

1) To compute x + y + z, each of the values must be retrieved from memory and placed in a register, the sum of x and y must be computed and saved in another register, z must be added from that sum, and the final answer must be stored in memory.

2) A similar process is required to compute (2x) + y. The point of this example is that the multiplication by 2 is accomplished by adding x to x.

5. 6 每個三分

16 64

6. 12 分每題 1 分

A	101001
B	000000
C	000100
D	110011
E	111001
F	111110
G	010101
H	111111
I	010000
J	101101
K	000101
L	001010

7. 兩種不同答案皆可 6 分

Ans1: XOR 10000001

Ans2: AND 00000000

8. 4 分

200 * 1024 * 8 / 15 = 109226.67sec = 1820.44min = 30.34hr

9. 8 分

CISC	RISC
Emphasis on hardware	Emphasis on software
Multiple instruction sizes and formats	Instructions of same set with few formats
Less registers	Uses more registers
More addressing modes	Fewer addressing modes
Extensive use of microprogramming	Complexity in compiler
Instructions take a varying amount of cycle time	Instructions take one cycle time
Pipelining is difficult	Pipelining is easy

10. 10 分 邏輯對就可以

1) R0 -> A

2) R1 -> B

3) R3 -> R0 + R1

4) R3 -> C

5) HALT

11. 6 分

temporarily stores frequently used instructions and data for quicker processing by the CPU of a computer.

12. 6 分每個兩分

Control Unit、ALU、Register and Cache

13 4 分

25 bits

14 4 分每題兩分

Divide by 4 >> >>

Multiple by 16 << << << <<