

While you are answering the questions, please make your answer concise and clear.

一. Please read the following paragraphs:

The plummeting DRAM prices have spilled over into flash memories. Prices for flash chips have dropped by more than 50 percent since earlier this year, according to Asian industry managers and market sources.

"The volumes for flash memories continues to increase, but the average selling prices continues to drop," said Min Wu, president of Taiwan's Macronix International, a Hsinchu-based supplier of EPROMs, flash memories, and other products.

Prices for flash memories will continue to erode this year and next, added a source from Taiwan's Winbond Electronics, a Hsinchu-based supplier of flash memories, SRAMs, and other parts.

The price for a 1-megabit flash memory has fallen to just below \$2 in recent days, from about \$2.60 or so earlier this year, several sources said. Meanwhile, a 2-megabit flash memory part has also fallen by 30 percent from earlier this year, to about \$2.50 right now, sources added.

Prices for 4-megabit parts have dropped from \$6 earlier this year, to below \$4 now, while 8-megabit flash now sells for \$5.50, compared with \$11. Meanwhile, a 16-megabit part has dropped to \$12 from \$18 earlier this year, according to market

SOURCES.

Please answer the first four questions regarding its characteristics and how long its content will last :

1. What is the "DRAM"? (2 points)
2. What is the "SRAM"? (2 points)
3. What is the "EPROM"? (2 points)
4. What is the "flash memory"? (2 points)
5. Among above four types of memories, which one has the highest cost at the same capacity? (1 point)
6. Among above four types of memories, which one could achieve the highest density given the same manufacturing technique? (1 point)

二. Show what will happen

7. if you negate the 8 bit 2's complement representation of -128 ?(5 points)

三. Work out the numbers that represent the string 1011 in

8. binary numbering system. (1 points)
9. octal numbering system. (1 points)
10. hexadecimal numbering system. (1 points)
11. decimal numbering system. (1 points)

四. Cache memories are high-speed buffer memories that are placed between processor and main memories.

12. What aspect will you concern in the cache design? (6 points)

五. A single-precision format for floating-point numbers can be represented as following $X = (-1)^s * 2^{e-128} * (.1f)$, for $0 < e \leq 255$. The base of the representation is 2 and the excess is 128. In the mantissa, the highest order significant figure is implied, with the binary point to its left. Find out the decimal value of the numbers shown in the following table:

	<i>s</i>	<i>e</i>	<i>f</i>	
13.	1	10000001	10 1010 0010 0000 0000 0000 0	(3 points)
14.	0	01110010	10 1100 1000 0000 0000 0000 0	(3 points)

六. Simplify the following function to get the equivalent equation by using the minimum number of input symbols :

15. $(A+B+C)(\bar{A}+B+C)(\bar{A}+B+\bar{C})$ (5 points)

七. Perform 2's complement representation in the following questions.

16. By your best effort, how do you define an efficient way to represent the fixed-point numbers ranging from -1 to 1 if you only have 4 bits?(6 points)

17. Calculate the possible output numbers according to your design in prob. 16. Display the binary numbers with respect to the associated fixed-point numbers.

八. (8 points).

18. What is ASP and its architecture? (5 points)

19. What is different between Extranet and Intranet? (4 points)

20. What is the Intranet information exchange model? (5 points)

21. What is different between SSL and S-HTTP? (5 points)

22. List four kinds of workflow classifications. (5 points)

23. What is the spiral model? (6 points)

24. What are the software measurements? (5 points)

25. What is the waterfall model? (5 points)

26. List four types of change are encountered during the maintenance. (4 points)