1. Explain the following terms: (24%)

   (a) Booting procedure　　(b) Pipelining　　(c) Semaphore

   (d) Domain name system　　(e) Pulse-code modulation　　(f) HTTP

2. Suppose the machine instruction format is two bytes long, the bit position is counted from left to right by 1,2,3,...,16 and with the follopwing information, 1-4 bit: OP code, 5-8 bit: Register number and 9-16 bit: Memory address. Now a symbolic identifier X is stored at memory address (5A) and Y at (5B), the OP code of LOAD is (3) and STORE is (5), While (5A), (5B), (3) and (5) are all in hexadecimal notations.Write instructions with hexadecimal notations and machine codes.

   (a) Load the contents of X to register number 3. (8%)

   (b) Store the contents of register number 4 to symbolic identifier Y. (8%)

3. Describe a method for storing three-dimensional homogeneous arrays, what addressing formula would be used to locate the entry in the ith plane, jth row, and the kth column? (10%)

4. (a) What is called page fault? (10%)

   (b) Suppose physical memory is 256 KB and is partitioned into eight page frames, if logical memory is 5 MB, find the number of pages needed in virtual memory. (10%)

5. What is the language translation process? (10%)

6. A conceptual tree is shown as below:
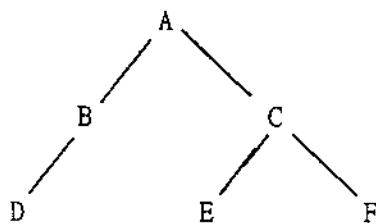
   How to express an actual organization of a binary tree using a linked storge system. (10%)

7. Using C or C++ computer language to write a main program for input 100 integer number in array A, calling a subprogram to calculate the total sum and print out.(Hint: You need to define a subprogram) (10%)