(1) Describe the following terminologies:(25%)
    (a) Operating system, (b) Linker(Loader), (c) CISC/RISC,
    (d) Multiprogramming/Multitasking, (e) Complier/Interpreter.

(2) Illustrate the reasons why the DOS and UNIX are more popular than any other operating systems for computer system.(10%)

(3) (a) Describe one algorithm for the internal sorting. Note: Internal sorting means the sorting for all the data stored in the main memory of the computer.
    (b) Implement the algorithm using any high level language. There are two arguments should be passed to this routine: 1. Integer array IX(n) for storing the data before and after sorting; 2. Integer N for denoting the length of array IX.(15%)

(4) Write a recursive routine to print out the hexadecimal representation for the input argument N using any high level language.(15%)

(5) What is the INTERRUPT? Describe its advantages and disadvantages.(10%)

(6) Design the Asynchronous and Synchronous decade counter.(15%)

(7) (a) Draw the flowchart for calculating the value sin(1),(10%)
        $\sin(x) = x - x^3/3! + x^5/5! - x^7/7! + \ldots$
    (b) Discuss the possible error sources.
    (c) Describe the possible criteria for stopping the computation when the error is within the defined limit.