B.E. Computer Science & Engineering Fourth Semester
CS404 - System Programming / Operating System

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Notes : 1. All questions carry equal marks.
           2. Due credit will be given to neatness and adequate dimensions.
           3. Assume suitable data wherever necessary.
           4. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Explain the following terms : **8**

    i) Assembler   ii) Compiler

    iii) Formal System   iv) Multiprogramming

    b) Explain evolution of loader in detail. Also mention its functions in the present system. **8**

OR

2. Write short notes on : **16**

    i) Operating System User Viewpoint : functions

    ii) Operating System : User Viewpoint : Batch control Language

3. a) Explain General Machine Structure with the help of block diagram. **8**

    b) Explain various data formats supported by IBM-360 machine. **8**

OR

4. a) Explain the following IBM-360 instruction with the help of syntax and example. **8**
    i) DC   ii) BR 14
    iii) BALR   iv) USING

    b) Explain address mechanism used in IBM-360. Also list its advantages and disadvantages. **6**

    c) What are the advantages of assembly language over machine language? **2**

5. a) Explain Pass-1 of a 2-Pass assembler with the help of detailed flowchart. **8**

    b) List various databases used in the 2-Pass assembler design in both of its passes. **8**

OR

6. a) For the following program, find :- **10**
    i) Expanded Code
    ii) MDT
    iii) MNT

```
MACRO
DEFINE          & SUB
MACRO
& SUB           & y
CNOP            0,4
BAL             1,*+ 8
DC              A (& y)
L               15,=V (& SUB)
BALR            14,15
MEND
MEND
```

b)   Explain the significance of MACRO processor. Also explain where and how it is defined.   **6**

7.   a)   Explain the following types of address constants with the help of example of each :   **4**

     i)   Simple Relocatable

     ii)   Absolute

     iii)   Complex Relocatable

   b)   List any two advantages and any two disadvantages of binding at execution time over binding at load time.   **4**

   c)   Explain Relocating Loader in detail.   **8**

OR

8.   Write short notes on **any four.**   **16**
     i)   Compile-and-Go Loader   ii)   General Loader Scheme
     iii)   Dynamic Loading   iv)   LESA
     v)   GEST

9.   a)   With the help of a block diagram, explain the position of a typical device driver in the system and its interaction with the Operating System.   **8**

   b)   State the steps involved in installing a device driver in Unix system.   **8**

OR

10.   a)   What is a Regular Expression? state its basic rules for constructing regular expression for a given language.   **4**

   b)   Draw and explain various databases used to design Lexical Analysis phase of a compiler.   **8**

   c)   Explain algorithm of Lexical Analysis phase of compiler in brief.   **4**

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