11920

3 Hours / 100 Marks   Seat No.

Instructions :   (1)   All Questions are *compulsory.*

(2)   Answer each next main Question on a new page.

(3)   Illustrate your answers with neat sketches wherever necessary.

(4)   Figures to the right indicate full marks.

Marks

1.   Attempt any FIVE of the following :   **5 × 4 = 20**

(a)   Explain foundation of system programming.

(b)   Sort the following numbers in the ascending order using Bucket sort :

81, 56, 97, 34, 28, 07

(c)   Explain any four data structure formats used in Pass-I of an assembler.

(d)   List & explain the features of macro processor.

(e)   List four functions performed by loader.

(f)   State any four optimisation techniques uses by compiler.

(g)   Draw the parse tree for the string 'acddf' using top down parsing approach.

2.   Attempt any FOUR of the following :   **4 × 4 = 16**

(a)   Explain Binary search with example.

(b)   Draw flow chart of pass 1 of Two pass macroprocessor.

    (c)   Explain design of Absolute Loader.

    (d)   Explain overlay structure in detail.

    (e)   Draw the basic phases of compiler and explain the phase function.

    (f)   Describe block diagram of compiler.

3. **Attempt any FOUR of the following :**   **4 × 4 = 16**

    (a)   What are the four components of system software.

    (b)   Explain the following statements :

        (i)   DC

        (ii)   Start

        (iii) IS

        (iv) LTORG

    (c)   Explain conditional Macro expansion with example.

    (d)   Explain databases used in direct linking loader system software.

    (e)   Give the examples of arithmetic & non-arithmetic statements which can be used in compiler operation.

    (f)   Explain the concept of bottom up parser.

4. **Attempt any FOUR of the following :**   **4 × 4 = 16**

    (a)   List applications of system software.

    (b)   Apply interchange sort on following numbers :

           43, 25, 37, 12, 67, 96, 40, 9

    (c)   Explain implementation of macro calls within macros.

    (d)   Explain compile & go loader.

    (e)   Explain in detail machine dependent optimisation.

    (f)   Explain intermediate code generation in compiler.

5. **Attempt any FOUR of the following :** **4 × 4 = 16**

   (a) Draw the flowchart for Pass-I assembler.

   (b) Explain general design of an assembler.

   (c) State & explain task of macro processor.

   (d) Explain use of ESD, TXT, RLD, END cords used in loader.

   (e) What do you mean by syntax & intermediate phase ?

   (f) Differentiate between top down & bottom up parser.

6. **Attempt any TWO of the following :** **2 × 8 = 16**

   (a) What is need of searching & sorting techniques in system programming ? Elaborate your answer in detail.

   (b) State the purpose of following tables :

      (i) Literal table

      (ii) Terminal table

      (iii) Uniform symbol table

      (iv) Reduction table

   (c) Explain Relocating loader. State the advantages & disadvantages of BSS loader.

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