17517

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.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any <u>FIVE</u> of the following:** **20**

a) State the four functions performed by Macroprocessor.

b) Draw a labelled diagram of foundation of system programming and explain it in brief.

c) List four functions performed by loader.

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

e) List and explain 4 components of system software.

f) Draw flow chart of pass 1 of a 2 pass macroprocessor.

g) Construction argument list array for following statement & LAB INCR &arg1 &arg2 &arg3.

Marks

2. **Attempt any <u>TWO</u> of the following:** **16**

a) Draw a labled diagram of phases of compiler and explain each phase in short.

b) Draw the labelled diagram of general loading scheme and link and go scheme and compare the two schemes on the basis of allocation and linking.

c) State the purpose of following tables:

   (i) Literal table

   (ii) Terminal table

   (iii) Uniform Symbol table

   (iv) Reduction table

3. **Attempt any <u>FOUR</u> of the following:** **16**

a) List three applications of system software.

b) Compare Shell Sort and Radix Exchange Sort on the basis of space and time complexity.

c) State any four optimization technique uses by compiler.

d) Draw the output of syntax analysis phase for the string 'c = a + b' in the form of syntax tree.

e) State issues in implementation of macro calls within macros.

f) Compare static binding and dynamic binding on the basis of space and speed of execution.

4. **Attempt any <u>FOUR</u> of the following:** **16**

a) Define the following terms:

   (i) Overlays

   (ii) Subroutine linkage

b) Describe RR format of instruction by using a neat labelled diagram.

c) Explain with an example a macro call within macros.

d) State the data structures required for loader.

e) Observe the given statements. Write down whether they are declarative statement on assembler directive

    (i) DC

    (ii) Start

    (iii) DC

    (iv) LTORG.

f) For the given grammar, give the lexical analysis:

A = B + C (D ∗ F)

5.   **Attempt any TWO of the following:**   **16**

a) Sort the following integers in the ascending order using Bucket sort:

71, 46, 97, 24, 30, 11

b) Explain any four data structures formats used in Pass I of an assembler.

c) For the following sub-expression draw the table for intermediate code with optimization and without optimization:

$z = (a + b) ∗ (a + b)$

6.   **Attempt any FOUR of the following:**   **16**

a) Write 2 advanced features supported by Macros.

b) Differentiate between top down and bottom up parser.

c) State and explain functions of a loader.

d) State Binary Search Method taking an example of 5 integers.

e) What are the data structure formats used by lexical phase of compiler?