17634

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.

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

Marks

1. a) **Attempt any THREE of the following:** **12**

(i) Explain foundation of system programming with diagram.

(ii) Explain different data structures used by pass-II of an assembler.

(iii) Define macro and describe macro calls with macro.

(iv) State and explain four basic tasks performed by macro processor.

b) **Attempt any ONE of the following:** **6**

(i) Explain different components of system software.

(ii) Describe the main function of lexical analysis phase of compiler.

Marks

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

a) Draw the flowchart for pass-1 of a two pass assembler.

b) Draw the flowchart for pass-1 of a two pass macro-processor

c) State the functions of ESD, RLD, TXT and End cards in the object deck and advantages of direct linking loader.

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

a) Differentiate between passes of compiler and phases of compiler.

b) Describe conditional macro with suitable example.

c) Sort the following numbers in ascending order using bucket sort: 123, 567, 231, 765, 321, 452, 847, 611

d) Explain evolution of system programming in brief.

e) Draw lexical analysis output for the following grammar: Interest - p * n * r;

4. a) Attempt any THREE of the following: **12**

(i) Differentiate between top down parser and bottom up parser.

(ii) Explain four purposes of storage assignment phase of compiler.

(iii) Explain Binary search with suitable example.

(iv) Explain role of location counter of pass 1 of an assembler.

b) **Attempt any ONE of the following:** **6**

(i) Draw the output of syntax analysis phase for the string "x = a + b * c + d" in the form of syntax tree

(ii) Draw the parse tree for the string "aababaa" using top down parsing approach for the following grammar: S – > asa ¦ bsb ¦ a ¦ b

Marks

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

a) Describe the concept of dynamic binders and relocating loaders.

b) Draw the block diagram of phases of compiler

c) Explain the structure of Micro Defination Table (MDT), Micro Name Table (MNT) and argument list array (ALA) with the help of example.

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

a) Differentiate between machine independent and machine dependent optimization.

b) Draw and explain "Compile and Go" loaders.

c) Describe the necessity of overlays in linking loaders.

d) Explain following instructions with example:

(i) DC

(ii) DS

e) Describe absolute loader scheme with example.