

17634

15116

3 Hours / 100 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data, if necessary.
(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) Define system software and list components of system software. Describe any one.
 - (ii) Explain the use of following pseudo - ops -
USING, START, DC, DS
 - (iii) State and explain the tasks of macroprocessor.
 - (iv) State the difference between macropreprocessor and macro assembler.
- b) Attempt any ONE of the following: 6
- (i) Explain evolution of system software.
 - (ii) Draw the block diagram of phases of a compiler and state the main function of each phase.

P.T.O.

2. **Attempt any TWO of the following:** **16**
- a) Draw the flowchart for pass-I of assembler.
 - b) Draw and explain the format of MDT, MNT and ALA with any suitable example.
 - c) Explain the design of direct linking loader with neat diagram.
3. **Attempt any FOUR of the following:** **16**
- a) Explain the four purposes of storage assignment phase of compiler.
 - b) Explain conditional macro expansion with example.
 - c) Sort the following numbers by applying Radix Exchange Sort 10, 15, 05, 08, 02, 03.
 - d) Explain foundations of system programming with diagram.
 - e) List and give the syntax of database tables used in lexical analysis phase of compiler.
4. a) **Attempt any THREE of the following:** **12**
- (i) Describe the top-down parsing technique.
 - (ii) Explain machine dependent optimization phase of compiler with example.
 - (iii) Describe the first pass and second pass steps of assembler while stating the problem.
 - (iv) Demonstrate the use of datasets by assembler passes.
- b) **Attempt any ONE of the following:** **6**
- (i) Give standard code definition for +, *, -, = and generate the code for the following expression:
$$C = R * (S - F) + 2 * R * (S - F - 100)$$
 - (ii) Define parser. Draw the parse tree for the string 'abccd' using top-down parser.

5. Attempt any TWO of the following: 16

- a) Describe the term overlay structure and dynamic binder.
- b) Describe the syntax analysis phase of compiler and outline the algorithm for syntax analysis phase.
- c) Draw the flowchart for processing macro calls and expansion in two pass macro-processor.

6. Attempt any FOUR of the following: 16

- a) Describe elimination of common sub expression technique of optimization phase of compiler with suitable example.
- b) Describe “compile - and - go” loader with neat diagram.
- c) Draw the flowchart of Absolute loader.
- d) Consider the following assembly language program. Show pass1 and also show the entries of symbol table.

John : START 0

USING *, 15

L 1, FIVE

A 1, FOUR

ST 1, TEMP

FOUR DC F '4'

FIVE DC F '5'

TEMP DS 1F

END

- e) Explain the use of ESD, TXT, RLD and END card used in loader by giving example.
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