

17634

15162

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) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Answer any THREE of the following:** **12**
 - (i) Compare assembler and compiler.
 - (ii) Explain different data structure used by Pass-II of assembler.
 - (iii) State and explain four basic tasks of macro processor.
 - (iv) Draw flowchart for processing macro calls and expansion in II-Pass macro processor.
- b) **Answer any ONE of the following:** **6**
 - (i) Explain different components of system software.
 - (ii) What is the difference between:
 - 1) phase and pass
 - 2) syntax analysis and semantic interpretation
 - 3) token and uniform symbol

P.T.O.

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

- a) Write the content of symbol table, literal table, POT and MOT after Pass I of assembler for following code:

```

SIMPLE    START
           BALR      15, 0
           USING     *, 15
LOOP      L          R1, TWO
           A          R1, TWO
           ST         R1, FOUR
           CLI        FOUR + 3, 4
           BNE        LOOP
           BR         14
R1       EQU        1
TWO       DC         F '2'
FOUR      DS         F
           End

```

- b) Explain the following terms:
- (i) Parameter passing in macro
 - (ii) Nested macro calls
 - (iii) Conditional macro
 - (iv) Procedure
- c) Explain how symbolic names of subroutines are used in relocation and linking in BSS loader and dynamic loader.

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

- a) Outline the algorithm for syntax analysis phase of compiler.
- b) Describe the I/P and O/P of the macro processor. How it is dependent upon the assembler source code.
- c) Write a binary search algorithm with suitable example.
- d) Define operating system. Enlist its functions.
- e) Name the machine independent and dependent phases of compiler and justify your answer.

4. a) Answer any THREE of the following: 12

- (i) Explain the databases used in lexical phase.
- (ii) Draw block diagram of the phases of compiler and indicate the main function of each.
- (iii) Define following terms:
 - 1) Searching
 - 2) Sorting
 - 3) Hashing
 - 4) Mnemonic
- (iv) Show the result of each pass for following using radix sort.
00100, 10001, 01011, 00001, 00010, 00101, 00000, 01001, 10101 etc.

b) Answer any ONE of the following: 6

- (i) Define parser. Draw the parse tree for the string 'abccd' using top down parser.
- (ii) Describe token with respect to lexical analysis with suitable example.

5. Answer any TWO of the following: 16

- a) At what point of time do each of the following loading schemes perform binding
 - Direct linking loader → BSS loader
 - Absolute loader → Dynamic linking loader
- b) With neat diagram describe the analysis and synthesis phase of general model of compiler.

- c) Write the content of MNT and MDT for following code

```
MACRO
ONE          & ARG
            L      1, & ARG
            A      1, = F '1'
            ST     1, & ARG
MEND
MACRO
TWO          & ARG1, & ARG2, & ARG3,
            ONE    & ARG1
            ONE    & ARG2
            ONE    & ARG3
MEND
```

6. Answer any **FOUR** of the following:

16

- a) What kind of error that can be detected in a source program during syntatic analysis.
 - b) What is the purpose of ID number on ESD card? Why it is not needed for locally define symbol.
 - c) List the specification of data structures in direct linking loader.
 - d) Explain binary search algorithm with example.
 - e) Explain the following terms:
 - (i) Segment
 - (ii) Card
 - (iii) Core
 - (iv) Deck
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