

17634

21819

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) **Answer any THREE of the following:** **12**
- (i) Define operating system. Enlist facilities provided by operating system.
 - (ii) Draw RR and RX format of instruction. Describe the fields in it.
 - (iii) State and explain four basic tasks performed by macro processor.
 - (iv) Describe the features of macro facility.
- b) **Answer any ONE of the following:** **6**
- (i) Define system software? Explain components of system software.
 - (ii) Describe token with respect to lexical analysis with suitable example

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 source code.

```
JOHN      START      O
           USING      *, 15
           L          1, FIVE
           A          1, FOUR
           ST          1, TEMP
FOUR      DC          F '4'
FIVE      DC          F '5'
TEMP      DS          1F
           END
```

- b) Explain basic functions of macro processor. Explain data structures used by macro processor.
- c) Explain subroutine linkage with suitable example.

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

- a) Explain the purpose of storage assignment phase in compiler.
- b) Explain macro instructions with the help of its structure and example
- c) Draw the flow chart for pass II of two pass assembler processing macro.
- d) Draw a neat labeled diagram of foundation of system programming.
- e) List the machine independent and dependent phases of compiler and justify it.

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

- (i) Explain bottom up parser.
- (ii) For the given expression generate the machine dependent and independent code
$$\text{Cost} = \text{Rate} * (\text{start} - \text{finish}) + 2 * \text{Rate} * (\text{Start} - \text{finish})$$
- (iii) Sort the following number by using address calculation sort.

21	9	19	27	1	16	13	5	11
2	31	26						

- (iv) What is the difference between BALR and using instructions?

b) Answer any ONE of the following: 6

- (i) Define compiler. Draw the structure of compiler.
- (ii) Define parser. Draw the parse tree for the string 'abccd' using top down parse.

5. Answer any TWO of the following: 16

- a) Explain the specifications of data structures and formats of databases used in direct linking loader.
- b) Explain the different phases of compiler.
- c) Explain how to implement macro calls within macros.

6. Answer any FOUR of the following: 16

- a) What kind of errors that can be detected in a source program during syntatic analysis.
 - b) Write the necessity of overlays in linking loaders.
 - c) Explain binders and dynamic binders.
 - d) What is searching? List and explain different types of searching
 - e) Draw the neat labeled diagram of 'Compile and Go' loader scheme.
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