

17634

**21718**

**3 Hours / 100 Marks**

Seat No.

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- 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) Assume suitable data, if necessary.

**Marks**

**1. Answer any FIVE of the following :**

**5 × 4 = 20**

- (a) Draw a neat labelled diagram of foundation of system programming.
- (b) What is binary search ? Explain with an example.
- (c) What is meant by implementation of macro call within macros ? Give an example.
- (d) State the six phases of compiler.
- (e) Draw a labelled diagram of general loading scheme.
- (f) Mention the necessity of overlays in linking loader.
- (g) Define the terms : Assemblers and Compiler.

**2. Answer any TWO of the following :****2 × 8 = 16**

- (a) Draw the flowchart for pass 2 of a two pass assembler.
- (b) Describe the design of absolute loader with respect to its performance based on (1) Allocation, (2) Loading, (3) Relocation, (4) Linking.
- (c) Describe token with respect to lexical analysis with a suitable example and classify the tokens.

**3. Answer any FOUR of the following :****4 × 4 = 16**

- (a) Write in brief about any two components of system software.
- (b) Explain random entry searching with an example.
- (c) Describe the four tasks performed by Macro-processor.
- (d) For the following sub-expression, draw the intermediate code with optimization :  $z = (x + y) * (x + y) + 3 (x + y)$ .
- (e) Describe the design of absolute loader.
- (f) What are the data structures required to implement direct linking loader.

**4. Answer any FOUR of the following :****4 × 4 = 16**

- (a) Compare shell sort and address calculations sort.
- (b) Describe the issues in implementation of macroprocessor within an assembler.
- (c) Write about bottom up parsing technique and how it differs from top down parsing.

- (d) Write the purpose of storage allocation and interpretation phase.
- (e) Describe what is dynamic binding.
- (f) Write what is meant by overlays. Explain with a diagram.

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

**4 × 4 = 16**

- (a) Explain the significance of System Programming.
- (b) Write the issues in implementation of a single pass macro processor.
- (c) Write four methods of machine independent optimization
- (d) Explain with an example how linear search is performed.
- (e) Define Parser. Draw the parse tree for the string abbccd.
- (f) Explain how Grammar is used for finding syntactic error in syntax analysis phase of compiler.

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

**2 × 8 = 16**

- (a) Sort the given numbers in descending order using radix exchange sort. Show the steps :  
78, 387, 42, 09, 12, 881.
  - (b) Draw a flow chart of Pass I of a two pass macroprocessor.
  - (c) Describe the databases used in lexical, syntactic and Symantic phases of compiler.
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