

- N.B:
- (1) Question No. 1 is compulsory.
 - (2) Attempt any three questions out of the remaining five questions.
 - (3) Figures to the right indicate full marks.
 - (4) Make suitable assumptions wherever necessary.

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| Q.1. | A. | Compare Application Software and System Software. | 5 |
| | B. | Construct operator precedence Parser for the grammar:
$E \rightarrow E+E \mid E * E \mid a$.
Parse the string "a+a*a" using the same parser. | 5 |
| | C. | Explain forward reference concept with example. | 5 |
| | D. | Explain the functions of a Loader. | 5 |
| Q.2. | A. | Explain with flowchart design of two pass assembler. | 10 |
| | B. | Construct Three address code for the following program | 10 |
| | | <pre> i = 1; x = 0; while (i <= n) { x = x + 1; i = i + 1; }</pre> | |
| Q.3. | A. | Explain Direct Linking Loader in Detail. | 10 |
| | B. | Design LL(1) parsing table for the given grammar:
$S \rightarrow iCtSE \mid a$
$E \rightarrow eS \mid \epsilon$
$C \rightarrow b$
Also state that whether the given grammar is LL(1) or not. | 10 |
| Q.4. | A. | Explain the working of a Single-pass macro processor with neat flowchart. | 10 |
| | B. | Explain with suitable example code optimization techniques. | 10 |
| Q.5. | A. | Explain different issues in code generation phase of compiler. | 10 |
| | B. | Explain DAG with suitable example. | 10 |
| Q.6. | A. | Explain the different phases of a compiler with suitable example. | 10 |
| | B. | Explain advanced macro facilities with suitable examples. | 10 |