

TE / VI / COMP / C-Scheme / DEC-2024/03-12-2024

(3 Hours)

Total Marks: 80

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.



- Q.1. A. Compare Application Software and System Software. 5  
 B. Construct operator precedence Parser for the grammar: 5  
 $E \rightarrow E+E \mid E * E \mid a$ .  
 Parse the string "a+a\*a" using the same parser.  
 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  

```

i = 1;
x = 0;
while (i <= n)
{
    x = x + 1;
    i = i + 1;
}

```
- Q.3. A. Explain Direct Linking Loader in Detail. 10  
 B. Design LL(1) parsing table for the given grammar: 10  
 $S \rightarrow iCtSE \mid a$   
 $E \rightarrow eS \mid \epsilon$   
 $C \rightarrow b$   
 Also state that whether the given grammar is LL(1) or not.
- 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