

(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) Make suitable assumptions wherever necessary.

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- Q.1.** A. What is three-address code? Generate three-address code for – **5**
- ```

while (a<b) do
 if(c<d) then
 x:=y+z
 else
 x:=y-z

```
- B. Compare between Compiler and Interpreter. **5**  
 C. Explain absolute loader. State its advantages and disadvantages. **5**  
 D. Discuss with example 'forward reference'. **5**
- Q.2.** A. Construct SLR parser for the following grammar and parse the input **10**  
 “( )”:  $S \rightarrow (S)S \mid \epsilon$ .  
 B. State and explain with examples, different types of statements used in assemblers with respect to system programming. **10**
- Q.3.** A. Explain the concept of basic blocks and flow graph with example the **10**  
 three-address code.  
 B. Explain with help of a flowchart, the first pass of two-pass macro processor. **10**
- Q.4.** A. Explain the phases of a compiler. Discuss the action taken in various **10**  
 phases to compile the statement:  
 $a=b*c+10$ , where, a, b, c are of type real.  
 B. Write short note on: **10**  
 (i) Syntax-directed Translation, (ii) Macro facilities
- Q.5.** A. What is code optimization? Explain with example, the following code **10**  
 optimization techniques:  
 (i) Common sub-expression elimination (ii) Code motion  
 (iii) Dead code elimination (iv) Constant propagation  
 B. Explain Direct Linking Loader in suitable example. **10**
- Q.6.** A. Test whether following grammar is LL(1) or not. If it is LL(1), construct **10**  
 parsing table for the same:  
 $S \rightarrow 1AB \mid \epsilon$   
 $A \rightarrow 1AC \mid 0C$   
 $B \rightarrow 0S$   
 $C \rightarrow 1$   
 B. Draw and explain the flowchart of Pass-I of two pass assembler with suitable example. **10**