

Q.P. Code : 581500

(3 Hours)

[ Total Marks : 80

- N.B. : (1) Question No. 1 is **compulsory**.  
 (2) Attempt any **three** from the remaining questions.  
 (3) Assume suitable **data** if **necessary**.  
 (4) **Figures** to the **right** indicate **full** marks.

1. (a) What is the role of an automata in compiler design. 5  
 (b) Eliminate Left recursion in the following grammar (Remove Direct and Indirect recursion) 5  
 $S \rightarrow Aa \mid b$   
 $A \rightarrow Ac \mid Sd \mid \epsilon$   
 (c) What is an activation record? Draw diagram of General Activation record and explain the purpose of different fields of an activation record. 5  
 (d) What is the difference between Compiler and Interpreter. 5
  
2. (a) Explain with an example Quadruples, Triples, indirect triples. 10  
 (b) What is the difference between Dynamic Loading and Dynamic Linking explain with an example 10
  
3. (a) Write a note on JAVA compiler environment. 5  
 (b) Write a brief note on Design of an Editor. 5  
 (c) Explain synthesized and Inherited attributes used in Syntax Directed Definition. 5  
 (d) Find FIRST and FOLLOW Set for given grammar below 5  
 $E \rightarrow T E'$                        $E' \rightarrow + T E' \mid \epsilon$   
 $T \rightarrow F T'$                        $T' \rightarrow * F T' \mid \epsilon$   
 $F \rightarrow (E)$                        $F \rightarrow id$
  
4. (a) Explain different Code Optimization technics along with an example. 10  
 (b) For the following grammar construct LR(0) parser table 10  
 $S \rightarrow aCDe$   
 $C \rightarrow Cbc$   
 $C \rightarrow b$   
 $D \rightarrow d$   
 And Parse the string abbcbcde. Show contents of stack and i/p buffer and action taken after each step.

5. (a) Draw and explain DAG and represent the following example with it. **10**  
(a / b) + (a / b) \* (c \* d)
- (b) What are the different phases of Compiler ? Illustrate compilers internal representation of source program for following statement after each phase **10**  
Amount = P + P \* N \* R / 100
6. (a) With reference to Assembler explain following tables with suitable example. **10**  
(i) POT (ii) MOT  
(iii) ST (iv) LT
- (b) What are the different issues in design of Code Generator ? Explain with an example. **10**
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