



- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Due credit will be given to neatness and adequate dimensions.
 9. Assume suitable data whenever necessary.
 10. Illustrate your answers whenever necessary with the help of neat sketches.
 11. Use of non programmable calculator is permitted.

1. a) Explain different phases of compiler. 9
 b) What is boot strapping complier and cross compiler. 4

OR

2. a) Write a LEX program that recognizes :- 9
 i) Keyword if, while, for
 ii) Identifier
 iii) Operator +|-|*|1.
 b) Why lexical analyzer reads few characters beyond the token in advance before declaring validity of token. Explain with example. 4

3. a) Generate CLR table for following grammar. State whether grammar is CLR or not. 10
 $B \rightarrow bDAe$
 $D \rightarrow Dd;|E$
 $A \rightarrow A;E|E$
 $E \rightarrow B|a$
 b) What is an ambiguous and unambiguous grammar. 4

OR

4. a) Construct LL (1) parser for following grammar. Show moves made by this LL(1) parser on input "id + id * id" 8
 $E \rightarrow E+T|T$
 $T \rightarrow T*F|F$
 $F \rightarrow (E)|id$
 b) Compare SLR, CLR and LALR parser. 6

5. a) Write SDTS and obtain three address code for the following statement. 9
 if ($P > q$ and $r \leq s$)
 then
 $u = u * v;$
 else
 $u = u/v;$
 Draw annotated parse tree

b) Define:-

i) Inherited attribute

ii) Synthesized attribute

4

OR

6. Translate the following code into intermediate code

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$A[i, j, k] = B[i, j] + C[i + j + k]$
where A is 3D array of size 10x10x10
B is 2D array of size 10x10
C is 1D array of size 30
Bytes per word = 2
Draw annotated parse tree for the same.

7. a) What are syntactic and semantic errors? Suggest method to recover from these errors.

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b) Explain phrase level error recovery method for LR parser.

7

OR

8. a) Explain different data structures used for symbol table. Also compares pros and cons of each.

6

b) What is an activation record? When this record need to be set up? Explain meaning.

7

9. a) Explain loop unrolling and jamming with suitable example.

6

b) What is reducible flow graph? Explain with example.

4

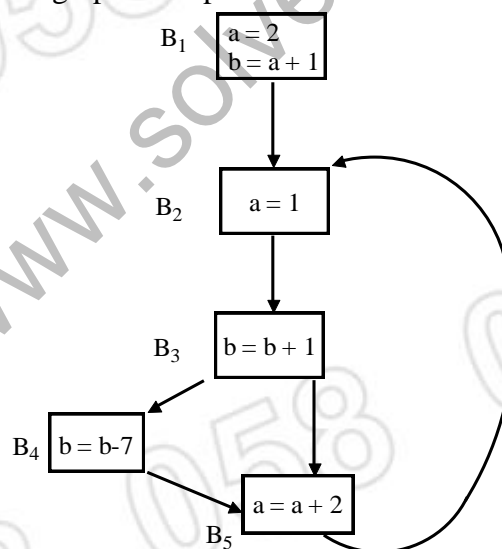
c) Write a short note on DAG.

4

OR

10. Consider the following flow graph. Compute IN and OUT for the flow graph.

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11. a) Generate code for the following expression using labeling algorithm
 $x = (a + b) - (e - (c + d))$

13

OR

12. a) What are the problems in the way of good code generation.

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b) Explain peephole optimization techniques in detail.

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