

- iii) The edge in a flow graph whose heads dominate their tails are called
- a) Back edge
 - b) Flow edges
 - c) Front edges
 - d) None of these.
- iv) Which of the following is not a loop optimizer ?
- a) Loop unrolling
 - b) Loop jamming
 - c) Loop heading
 - d) Induction variable elimination.
- v) The regular expression $(a|b)^*abb$ denotes
- a) all possible combination of a 's and b 's
 - b) set of all strings ending with abb
 - c) set of all strings starting with a and ending with abb
 - d) none of these.
- vi) Shift reduce parsers are
- a) top-down parsers
 - b) bottom up parsers
 - c) may be top-down or bottom up parsers
 - d) none of these.

vii) The following productions of a regular grammar generates a language L.

$$S \rightarrow aS \mid bS \mid a \mid b$$

The regular expression for L is

- a) $a + b$
- b) $(a + b)(a + B)^*$
- c) $(a + b)^*$
- d) $(aa + bb)a^*$

viii) The regular expression representing the set of all strings over (x, y) ending with xx beginning with y is

- a) $xx(x + y)^*y$
- b) $y(x + y)^*xx$
- c) $yy(x + y)^*x$
- d) $y(xy)^*xx$

ix) The basic limitation of Finite State Machine is that

- a) it cannot remember arbitrary large amount of information
- b) it cannot recognize grammars that are regular
- c) it sometimes recognize grammars that are not regular
- d) all of these.

- x) An annotated parse tree is a parse tree
- a) with values of only some attributes shown at parse tree nodes
 - b) with attribute values shown at the parse node
 - c) without attribute values shown at the parse tree nodes
 - d) with grammar symbols at the parse tree nodes.
- xi) Which one of the following errors will not be denoted by the compiler ?
- a) Lexical error
 - b) Semanatic error
 - c) Syntactic error
 - d) Logical error.
- xii) If a grammar is in LALR (1) then it is necessarily
- a) LL(1)
 - b) LR(1)
 - c) SLR(1)
 - d) none of these.

GROUP - B**(Short Answer Type Questions)**Answer any *three* of the following. $3 \times 5 = 15$

2. Find out regular expression corresponding to the finite automata :

PS	Next State	
	a	b
q1	q1, q2	-
q2	q3	q2, q2
q3	q2	-

3. Translate the arithmetic expression $a^*(b + c)$ into
- Syntax tree
 - Three-address code
 - Postfix notation $2 + 2 + 1$

4. What is handle ?

Consider the grammar $E \rightarrow E + E | E * E | id$

Find the handle of the right sentential forms of reduction for the string $id + id + id$. $1 + 4$

5. What is type checking ? Differentiate between Dynamic and Static type checking. $1 + 4$
6. What is look ahead operator ? Give an example with the help of the look ahead concept. Show how identifiers can be distinguished from keywords. $1 + 1 + 3$

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) What is symbol table ? How is it implemented ?
b) Explain Syntax and Semantic error.
c) What is code optimization ? How is it achieved ?
- $(1 + 4) + 5 + (2 + 3)$
8. Explain the following terms with the example given below :
- $a := b * (c + d / b) - (e * f)$
- a) Quadruples
b) Triples
c) Indirected Triples. $5 + 5 + 5$
9. a) Consider the following grammar and design a SLR parser table :
- $S \rightarrow AA$
 $A \rightarrow aA$
 $A \rightarrow b$
- b) Make a comparison between Predictive Parser and Shift Reduce Parser.
- c) What is Ambiguous Grammar ? $8 + 5 + 2$

10. a) What is peephole optimization ?
b) What is an activation record ? When and why are those records used ?
c) Generate three address code for the following program segment :
- ```
while (a < c and b > d) do
 if a = 1 then c = c + 1;
 else
 while a < = d do
 a = a + 3; 5 + (2 + 3) + 5
```

11. Write short notes on any *three* of the following : 3 × 5

- a) Symbol table organization  
b) YACC  
c) Issues in the design of a code generator  
d) Cross compiler  
e) Context-free grammar.
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