

## Q.No. 1

A. Construct DFA accepting strings of binary digits which are even numbers. [4]

B. Compute FIRST and FOLLOW sets and Construct a predictive parsing table for the following grammar, where S is the start symbol. [6]

$$S \rightarrow aBDh$$
$$B \rightarrow cC \mid \epsilon$$
$$C \rightarrow bC \mid \epsilon$$
$$D \rightarrow EF$$
$$E \rightarrow g \mid \epsilon$$
$$F \rightarrow f \mid \epsilon \quad (\text{where 'e' denotes epsilon})$$

## Q.No. 2

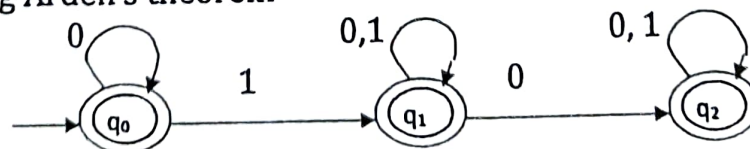
A. What are the different error recovery strategies adopted in compiler? explain [4]

B. Construct parsing table for the following grammar, where S is the start symbol [6]

$$S \rightarrow AaAb$$
$$S \rightarrow BbBa$$
$$A \rightarrow \epsilon$$
$$B \rightarrow \epsilon$$

## Q.No. 3

A. Construct a regular expression(RE) corresponding to the following FA using Arden's theorem [4]



B. Consider following grammar

$S \rightarrow aAb \mid bB$

$A \rightarrow Aa \mid \epsilon$

$B \rightarrow Bb \mid \epsilon$

and test whether the grammar is LL(1) or not?

[6]

Q.No. 4

A. What is the advantage of left recursive grammar over right recursive grammar in LR parsing. Explain with suitable example. [4]

B. Consider the program fragment and Generate three address code for it [6]

sum=0

for(i=1; i<=20; i++)

sum=sum+a[i]+b[i];

Q.No. 5

A. What is the use of FA in lexical analysis? Design a DFA for strings over {0, 1} having an even number of 0's and any no. of 1's. [4]

B. Design a PDA for Language  $L = \{ 0^n 1^n \mid n \geq 0 \}$  [6]

Q.No. 6

A. What is loop jamming? Explain code optimization by eliminating induction variables and code motion with suitable examples. [4]

B. Write SDD for generating three address code for Boolean expressions with &&, || (OR) and ! Operators. [6]

Q.No. 7

A. What are the various approaches for symbol table organization? Explain with examples. [4]

B. Give syntax tree, Directed acyclic graph (DAG) And three address code for expression if (a>0) then a= 3\*(b+1) else b = b+1. [6]