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Roll no.........

Sixth Semester

B.Tech.

Mid Semester Examination

March-2020

SE306 COMPILER DESIGN

Time: 1:30 Hours

Max. Marks: 25

Note: Answer ALL questions. All questions carry equal marks.
Assume suitable missing data, if any.

1 [a] Discuss whether the following statement are True/False.
  (I) The languages $L=\{0^m 0^n \mid n>=m>=0\}$ is not regular.
  (II) If L is a language containing at least one non empty word then L^* is an infinite language.
  (III) $L=\{wxw \mid w,x \in \Sigma^*\}$ is not regular language.
  (IV) The set of no. 1, 2, 4,................2^n,..........written in binary recognized by FA.
 (V) LR parsing techniques are strictly more powerful than LL parsing techniques.

  [b] Design a mealy machine and its transition table which accept two's complement of a binary number and PDA with transition function for Language $L= wcw^R \mid w \in \Sigma^*(a,b)$.

2 [a] Design a DFA for complement of Language L , which is defined as $L= a^*b^*c^*$, where a,b,c are the input alphabets for the language.

  [b] What is the parsing ? Define different types of parsing techniques in compiler.

3 [a] Define token , lexeme , handler and viable prefix. How many tokens and lexemes occur in the code fragment?

```
int main(void) {
    int n, i, curr, next, twoaway;
    printf("How many Tokens");
}
```

[b] Minimized the following DFA ;where q0 is initial state and q2 and q4 are final states.
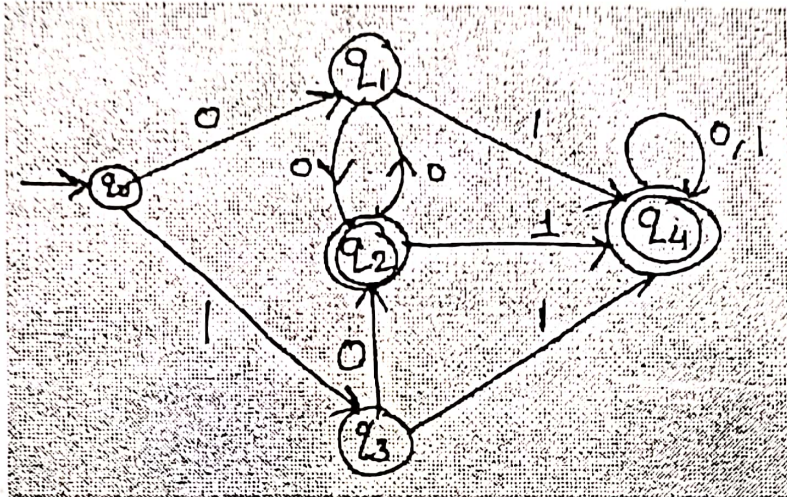
4 [a] Explain the steps to calculate first and follow set . Calculate the first and follow set for the following grammar.

$$S \rightarrow aAbB \; / \; bAaB$$
$$A \rightarrow S$$
$$B \rightarrow S$$

[b] What do you mean by one pass compiler, two pass compiler ,interpreter .Explain the different phases of compiler.

5 [a] What is Left recursion and left factoring , how to remove it ?
Remove Left factoring from the following grammar

$$S \rightarrow abA \; / \; abB$$
$$A \rightarrow a$$
$$B \rightarrow b$$

[b] Draw the predictive parsing table for the following grammar G:

$$S \rightarrow \text{while } E \text{ do } S \; | \; \text{do } S \text{ while } E \; | \; V$$
$$E \rightarrow V Q$$
$$Q \rightarrow R V \; | \; \varepsilon$$
$$R \rightarrow = \; | \; < \; | \; >$$
$$V \rightarrow a \; | \; b \; | \; c$$