DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Mid Semester Examination – Oct 2019

Course: B. Tech in Computer Sci. & Engineering   **Sem: V**

Subject Name: Theory of Computation   **Subject Code: BTCOC502**

Max Marks:20   **Date:- 24th Sept 2019**   **Duration:- 1 Hr.**

Instructions to the Students:

1. Figures to the right indicate marks.
2. Assume suitable data.

Q. 1 Select the correct option.   6*1=6 M.

1. _____ is a set of strings.

   a. Language   b. grammar   c. NFA   d. DFA

2. Let r and s are regular expressions denoting the languages R and S. Then (r s) denotes _____

   a. RS   b. R*   c. RUS   d. R+

3. In transition diagrams a state pointed by an arrow represents the _____ state.

   a. final   b. interior   c. start   d. final or start

4. _____ grammar is also known as Type 3 grammar.

   a. unrestricted   b. context free   c. context sensitive   d. regular grammar

5. Grammar that produce more than one Parse tree for same sentence is:

   a. Ambiguous   b. Unambiguous   c. Complementation   d. Intersection

6. S → Sab   S → a   is which grammar ?

   a. Right Linear Grammar   b. Left Linear Grammar   c. Linear Grammar   d. None of the above

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Q.2 Solve Any Two of the following.   2*3 = 6

(A) Construct the DFA (∑ = 0 , 1)

i) w= Strings starting and ending with same characters

ii) w= string with "101" as substring

(B) Consider following Grammar:

S→ A1B

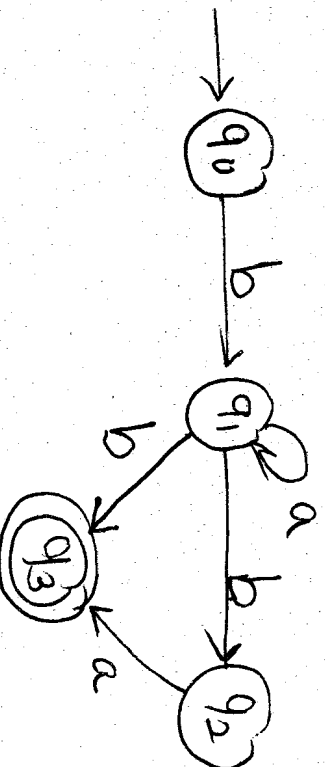A→ OA | epsilon

B→ 1B | 0B | epsilon

Give the leftmost derivation for the inputs:

1) 00101   2)1001

(C) Construct the regular Grammar for the given finite Automata:

Q. 3 **Solve Any One of the following.**

(A) What is pumping lemma technique?

Using pumping lemma show that L= {a^n b^n | n>=1 } is not regular language.

(B) **Convert Following NFA to DFA**

1)

state	0	1
➜ a	{a,b}	{a}
b	{c}	{c}
c	{d}	–
* d	{d}	{d}

2)

state	0	1
➜ p	{q,r}	{q}
*q	{r}	{q,r}
r	{s}	{p}
*s	–	{p]

*** End ***