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~~ 7 Oct 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 Marks**

1. _____ is a finite sequence of symbols.

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

2. In transition diagrams states are represented by _____

a. ellipses b. circles c. triangles d. rectangles

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

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

4. Regular grammars also known as _____ grammar.

a. Type 0 b. Type 1 c. Type 2 d. Type3

5. 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+

6. $S \rightarrow abS$ $S \rightarrow a$ is which grammar ?

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

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

(A) Construct the DFA ($\sum$ = a,b)

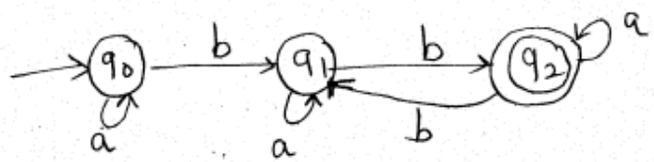
i) w= Strings starting and ending with different characters

ii) w= string with "aab" as substring

(B) Show that following grammar is ambiguous for the input " a*a+a"

S→ S+S | S-S | S*S | S/S | (S) |a

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



Q. 3 Solve Any One of the following. 1*8= 8 M

(A) What are the preliminary simplification methods of Context Free Grammar? With suitable example, explain these methods.

(B) 1. Construct the moore machine corresponding to the mealy machine

	Input symbol=0		Input symbol=1	
	Nextstate	output	Nextstate	output
q0	q1	N	q2	N
q1	q1	Y	q2	N
q2	q1	N	q2	Y

2. Convert following moore machine to mealy machine

State	0	1	Output
→ Q0	Q3	Q1	0
Q1	Q1	Q2	1
Q2	Q2	Q3	0
Q3	Q3	Q0	0

***** End *****