SV - 196

Total No. of Pages : 2

Seat No.	

S.E. (Computer Science and Engineering) (Semester - IV)

Examination, May - 2019

AUTOMATA THEORY

Sub. Code : 63531

Day and Date : Tuesday, 14 - 05 - 2019 **Total Marks : 50**

Time : 02.30 p.m. to 04.30 p.m.

Instructions :
1) **Question No. 1 and Question No. 4 are Compulsory.**
2) **Solve any one question from questions No.2 & question No. 3.**
3) **Solve any one question from questions No.5 & question No. 6.**
4) **Assume suitable data wherever necessary.**
5) **Figures to the right indicate full marks.**

Q1) Solve any three questions: **[15]**

a) Remove A productions from the grammar

$S \rightarrow ABCBCDA$

$A \rightarrow CD$

$B \rightarrow Cb$

$C \rightarrow a \mid \Lambda$

$D \rightarrow Bd \mid \Lambda$

b) Write a regular expression for

i) The Language containing strings starting with 01?

ii) The Language containing strings not containing 00?

c) State & prove Kleen's theorem Part I.

d) Design a DFA For the regular expression (11+110)*.

Q2) a) Find the context free grammar for the following languages. **[6]**

i) $L=\{a^i b^j c^k \mid i = j + k\}$

ii) $L=\{a^n b^m a^n \mid n \geq 0, m \geq 1\}$

b) Compare DFA with NFA. **[4]**

Q3) a) Explain recursive descent parsing. **[4]**

b) What is ambiguous CFG? Explain an example of ambiguous CFG. **[6]**

P.T.O.

Q4) Solve any three questions : **[15]**

a) Define Following Terms:

i) Pushdown Automata.

ii) Acceptance of a string by PDA.

b) Write Short note on "Universal Turing Machine".

c) Explain with suitable example intersection of two Context Free Languages.

d) Construct a Turing Machine for accepting even length string.

Q5) a) Construct PDA for following CFG. **[6]**

$S \rightarrow [S] \mid \{S\} \mid \Lambda$

b) Write short note on "Configuration of a PDA". **[4]**

Q6) a) Construct a Turing Machine to accept regular language represented by following regular expression **[6]**

$r = (a + b)^*abb$

b) Define Turing Machine and acceptance of a string by Turing Machine. **[4]**

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