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SF - 481

Total No. of Pages : 2

Seat No.	

S.E. (I.T.)(Part - II) (Semester - IV) (Revised) Examination, November - 2017

THEORY OF COMPUTATION

Sub. Code : 63521

Day and Date : Monday, 06 - 11 - 2017 **Total Marks : 100**

Time : 10.00 a.m. to 01.00 p.m.

Instructions : **1) Question No. 4 and Question No.8 are compulsory.**

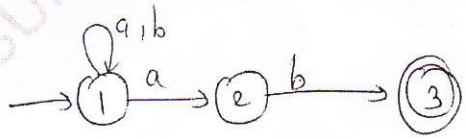
2) Attempt any 4 from remaining questions.

Q1) a) Give definition of Regular Expression. Derive RE for the following: **[8]**

i) String ending with 1

ii) String containing exactly two 0's.

b) Convert the following NFA to DFA: **[8]**



Q2) a) Define NFA null and draw NFA null for (1+110)*0* **[8]**

b) Explain DFA and draw DFA for string ending with ab over $\sum = \{a,b\}$. **[8]**

Q3) a) Explain Union, Concatenation and *'s of CFLs. **[8]**

b) What is ambiguous grammar? Show the below grammar is ambiguous and remove ambiguity **[8]**

$E \rightarrow E + E \mid E * E \mid (E) \mid\mid$

$\mid \rightarrow a \mid b$

P.T.O.

Q4) Write short note on following (Any three) [18]

a) Types of grammar

b) Chomsky Normal form

c) Deterministic Finite Automata

d) Applications of regular expressions

Q5) a) Explain TM For odd and even palindrome. [8]

b) Explain Top down parsing with example. [8]

Q6) a) Explain procedure for conversion of CFG to Top down PDA. [8]

b) What is PDA? Design PDA for Language $L = \{a^m b^{2m} \mid m > 0\}$ [8]

Q7) a) Prove that context free language is closed under Union, Concatenation and kleene star. [8]

b) Construct Turing machine for n%3 [8]

Q8) Write a short note on (Any three) [18]

a) Bottom Up parsing

b) Variations in TM

c) Universal TM

d) PDA for palindrome

SUK-KIT