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MID TERM EXAMINATION

FOURTH SEMESTER [B. TECH.] FEBRUARY 2019

Paper Code: ETCS 206 Subject: TOC

Time: 1Hour 30 Min. Maximum Marks: 30

Note: Attempt any three questions including Q. No. 1 which is compulsory.

Q1 Answer the following questions (2X5 =10)

a) Define NFA with the help of an example.
b) Construct a DFA to accept all strings over {0,1} which contains three consecutive zeros.
c) What is ambiguity in grammar? How is it removed?
d) State three closure properties of Context Free Languages(CFL).
e) Differentiate between deterministic PDA and non-deterministic PDA.

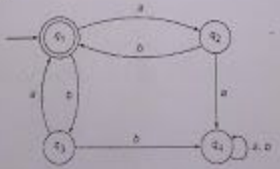
Q2 a) Minimize the following DFA (5)

b) i) Find a regular expression for the set $\{a^n b^m : (n + m) \text{ is odd}\}$. (2.5X2=5)
ii) Find a regular expression over {0, 1} for the all strings not ending in 10.

Q3 a) Prove that the following grammar is ambiguous (5)

$S \rightarrow a \mid aAb \mid abSb$,
$S \rightarrow aAAb \mid bS$

b) Construct the regular expression for the DFA shown below: (5)



Q4 a) Construct a PDA (Pushdown Automaton) to accept the language $L = \{ a^n b^n c^m d^m \mid m, n >= 1 \}$ by empty stack and by final state (5)

b) Eliminate useless symbols and productions from G = (N,T,P,S) where N = {N,A,B,C} and T = { a,b} and P = { S→aS/A/C,A→a, B→aa,C→aCb} (5)