DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY

"T1 Examination, FEB-2019"

Semester:IV
Subject: THEORY OF COMPUTATION & COMPILER DESIGN
Branch: CSE
Course Type: Core
Time: 90 Minutes
Program: B.Tech

Date of Exam: 02/02/2019
Subject Code: CSH209B-T
Session: II
Course Nature: Hard
Max.Marks:30
Signature: HOD/Associate HOD:

Note: Part A: All questions are compulsory. Each Question carries 2 marks.
Part B: Attempt any two questions. Each Question carries 10 marks.

PART-A

Q1. (a) Define finite Automata.

(b) Differentiate between NFA and DFA.

(c) A transition function table for finite automata with Q0 as initial and final state is given as:

Present State	Next State	
	1	0
Q0	Q2	Q1
Q1	Q3	Q0
Q2	Q0	Q3
Q3	Q1	Q2

Check whether the given strings are accepted or not using transition function:

i. 101101 ii. 000111

(d) Give any 4 closure properties of regular sets.

(e) Explain the terms: Regular set, Regular Expression, String, Transition Function.

PART-B

Q2. a) Design a finite automaton with 00 as substring over input symbols {0, 1}.

b) Design a finite automata for 0*(00+11)1*.

Q3. a) Construct a DFA equivalent to NFA given below where A is the initial state and E is the final state:

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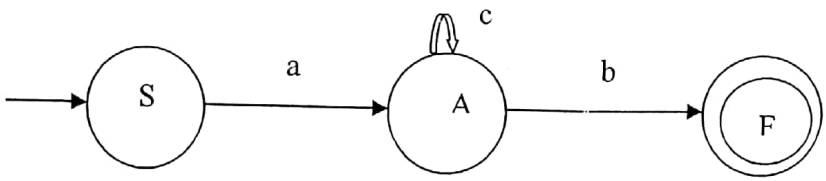
Present State	Next State	
	1	0
→ A	A,B	A
B	C,D	C
C	D	D
D	E	-
E	-	E

b) Find the regular expression corresponding to finite automata given below.



Q4. Construct a minimum state automaton equivalent to the finite automaton given below where A is the initial state and C is the final state:

Present State	Next State	
	1	0
A	B	F
B	G	C
C	A	C
→ D	C	G
E	B	F
→ F	C	G
G	G	E
H	G	C

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