Code No: 134BD

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, July/August - 2021
FORMAL LANGUAGES AND AUTOMATA THEORY
(Common to CSE, IT)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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1.a) Define Finite Automata. Explain about the model of Finite Automata.
b) Design a NFA for the following language L={0101^n where n>0}. [7+8]

2.a) Construct Minimum state Automata for the following DFA.
* denotes final state

Δ	0	1
→q1	q2	q3
q2	q3	q5
*q3	q4	q3
q4	q3	q5
*q5	q2	q5

b) Explain in detail about Melay and Moore Machines. [8+7]

3.a) Construct Finite Automata for the regular Expression 1(01+10)*00?
b) Explain about the Closure Properties of Regular sets. [8+7]

4.a) Show that L={a^{2n}/n<0} is Regular.
b) Construct a NFA equivalent to the regular expression 10(0+11)0*1. [7+8]

5.a) Construct a PDA for L={wcw^R /wϵ (0+1)*}
b) Explain in brief about decision properties of context free languages. [7+8]

6.a) Define Turing Machine. Explain about the Model of Turing Machine.
b) Obtain the Chomsky normal of the following grammar E→E+T/T, T→a/CE. [7+8]

7.a) Construct Turing machine for the languages containing the set of all strings of balanced paranthesis?
b) Discuss in brief about "church hypothesis". [8+7]

8.a) What is decidability? Explain in brief about any two undecidable problems.
b) Explain about Universal Turing Machine. [8+7]

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