Reg. No: ☐☐☐☐☐☐☐☐☐☐

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year II Semester Supplementary Examinations February-2022
FORMAL LANGUAGES AND AUTOMATA THEORY
(Common to CSE & CSIT)

Time: 3 hours   Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 a State what is meant by finite automata and discuss the Applications and Limitations FA.   L3   6M
   b Write why minimization of finite automata is required and explain the procedure adapted for minimization of finite automata in Table filling method.   L5   6M

OR

2 a Describe Finite Automata with Output.   L2   6M
   b Design a Moore machine which determines the residue mod-3 for each binary string treated as binary integer.   L6   6M

UNIT-II

3 a Prove R=Q+RP has unique solution, R=QP*.   L3   6M
   b Give the Closure properties of Regular Sets.   L1   6M

OR

4 a State Pumping lemma for regular languages.   L1   6M
   b Write Closure properties of regular language and applications of Pumping Lemma?   L1   6M

UNIT-III

5 a Define the following terms: L1   6M
      i) Useless symbol
      ii) Null production
      iii) Unit productions
   b List the closure properties of CFLs.   L1   6M

OR

6 a State Pumping lemma for Context-free language.   L1   6M
   b Show that L = {anbncn , where n>=1} is not context free.   L3   6M

UNIT-IV

7 a A PDA is more powerful than a finite automaton. Justify this statement.   L6   6M
   b Construct a PDA which recognizes all strings that contain equal number of 0's and 1's.   L6   6M

OR

8 a Define PDA? Explain graphical notation of PDA.   L2   6M
   b Explain acceptance of PDA with empty stack.   L5   6M

UNIT-V

9	a	Discriminate Universal Turing machine.	L5	6M
	b	Illustrate Linear Bounded Automta.	L2	6M

OR

10	a	Illustrate Linear Bounded Automata.	L2	6M
	b	Describe Recursive and Recursively Enumerable Languages.	L2	6M

*** END ***