Q.P. Code: 18CS0509 **R18**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Supplementary Examinations July-2022

FORMAL LANGUAGES AND AUTOMATA THEORY

(Common to CSE & CSIT)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

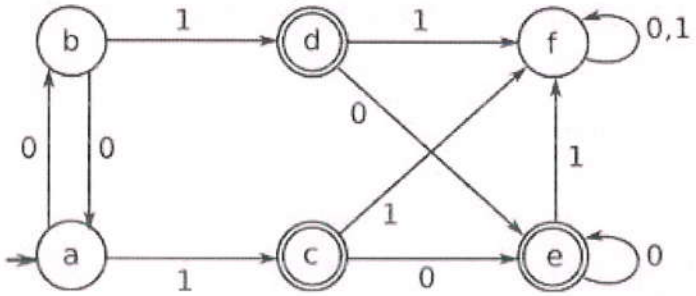
1	a	Write a procedure for conversion of NFA to DFA.	L1	2M
	b	Define Arden's theorem.	L2	2M
	c	What is linear grammar?	L2	2M
	d	How PDA acceptance can be defined?	L1	2M
	e	Describe Turing reducibility.	L2	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2 Minimize the following finite automata. L4 10M



OR

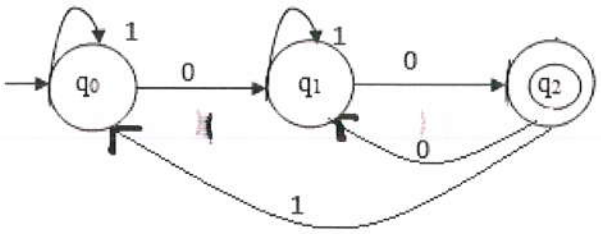
3	a	Define relations on set and explain its property with an example.	L2	5M
	b	Discuss Chomsky's Hierarchy of formal languages.	L3	5M

UNIT-II

4	a	Construct FA from RG S->aA/bB/a/b A->aS/bB/b B-> aA/bS	L4	5M
	b	Prove that the language L= $\{a^n b^n c^n \mid n>=1\}$ is not regular using pumping lemma.	L3	5M

OR

5 Explain about Arden's theorem, Construct RE from given Finite Automata L3 10M



UNIT-III

6	a	Write the procedure for Convert the grammar into CNF.	L2	5M
	b	Simplify the following CFG S → 0A | 1B | C, A-> 0S/00 , B-> 1/A , C->0/1.	L4	5M

OR

7	a	Remove the unit production from the grammar S→AB,A→E,B→C,C→D,D→b,E→a.	L3	6M
	b	Construct CFG for the language consisting of palindromes of the string.	L3	4M

UNIT-IV

8		Explain Deterministic Push Down Automata with example	L4	10M

OR

9		Construct PDA for the following Grammar S→0BB B→0S/1S/0 [L2,10M] Show an ID for the string 010000 is generated for PDA.	L4	10M

UNIT-V

10	a	Explain the Universal Turing machine.	L3	5M
	b	Give a brief note on MPCP.	L1	5M

OR

11		Design a multi head Turing Machine for checking whether a binary string is a palindrome or not. Show the ID for 1001.	L4	10M

END