D3BCA2103 (PAGES 2) Reg.No.....

Name: .....

THIRD SEMESTER UG DEGREE EXAMINATION, NOVEMBER 2022

(Regular/Improvement/Supplementary)

BCA

GBCA3C06T: THEORY OF COMPUTATION

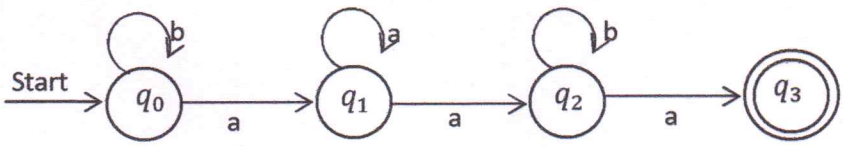
Time: 2 Hours **Maximum Marks: 60**

SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 20 Marks)

1. What is Symbol?
2. Write a note on Concatenation of string.
3. What is Bijective function?
4. Explain Type 0 Grammar.
5. What is Recursive Language?
6. Comment on Finite Automata.
7. What is Ambiguous Grammar?
8. Obtain grammar to generate string consisting of multiples of three a's.
9. When a language is accepted by Push Down Automata?
10. Explain the representation of PDA.
11. What is Turing Machine?
12. Explain language accepted by a Turing Machine.

SECTION B: Answer the following questions. Each carries *five* marks.
(Ceiling 30 Marks)

13. What is set? Explain the different representations of set.
14. Explain about Languages and their Automata.
15. Find the regular expression for the language accepted by the following automata.



16. Design a DFA which accepts set of all strings containing even number of 0's and even number of 1's.

(PTO)

17. Obtain grammar to accept the following language

L= {w: |w| mod 3 >0 where w∈{a}*}

18. Obtain a Turing Machine to accept the language L={w I w is even and ε={a,b} }.

19. Convert CFG to PDA

S → aSA / aA
S → bSB /bB
A → a
B → b

SECTION C: Answer any *one* question. Each carries *ten* marks.

20. Minimize the following DFA using table filling algorithm where A is the start state. The states C,F and I are final states.

	δ	0	1
→	A	B	B
	B	C	F
	*C	D	H
	D	E	H
	E	F	I
	*F	G	B
	G	H	B
	H	I	C
	*I	A	E

21. Obtain the grammar in Chomsky Normal Form

S → 0A | 1B
A → 0AA | 1S | 1
B → 1BB | 0S | 0

(1 x 10 = 10 Marks)