

Total No. of Question : [4]

Registration No. :

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Programme Name : Computer Science & Engineering(DS)

Regular S.Y.B.Tech.Sem.IV ESE May / June 2023

IV SEMESTER (2021 BATCH)

201DSL214-Theory of Computations

Duration : 2 Hours

Marks : 50

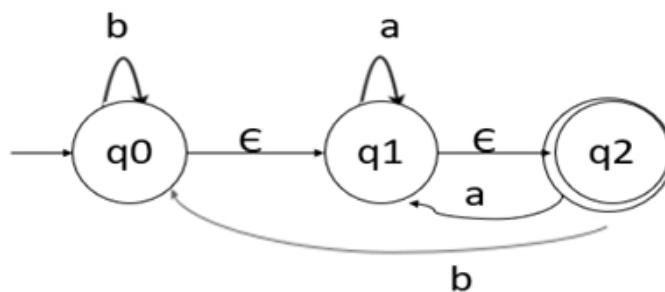
Instructions :

(Q1) All Questions are compulsory

[20.0]

(1.1) Convert following epsilon NFA to DFA

[6.0]



CO :- C214.1, C214.4

Blooms Taxonomy :- Understand, Create

(1.2) Compare Moore and Mealy Machine. Justify with diagram and give example.

[7.0]

CO :- C214.1

Blooms Taxonomy :- Understand

(1.3) Convert given CFG to CNF

[7.0]

$S \rightarrow ABC | BaB$

$A \rightarrow aA | BaC | aaa$

$B \rightarrow bBb | aD$

$C \rightarrow CA | AC$

$D \rightarrow \epsilon$

CO :- C214.1, C214.2

Blooms Taxonomy :- Understand, Create

(Q2) All Questions are compulsory.

[10.0]

(2.1) Construct Push Down Automata for the Language

[5.0]

$L = \{ a^n b^n \mid n \geq 1 \}$

CO :- C214.3

Blooms Taxonomy :- Understand

(2.2) Construct Push Down Automata for the Language [5.0]

$$L=\{WCW^R \mid W=\{a,b\}\}$$

CO :- C214.3

Blooms Taxonomy :- Understand

(Q3) **All Questions are compulsory.** [10.0]

(3.1) Define Turing Machine. [3.0]

CO :- C214.1, C214.4

Blooms Taxonomy :- Understand, Create

(3.2) Construct Turing Machine which recognizes the language. [7.0]

$$L= \{ a^n b^n c^n \mid n \geq 1 \}$$

CO :- C214.4

Blooms Taxonomy :- Create

(Q4) **Attempt any two out of three questions** [10.0]

(4.1) Write a note on Entropy. [5.0]

CO :- C214.5

Blooms Taxonomy :- Understand

(4.2) Explain Compression coding with the help of example. [5.0]

CO :- C214.5

Blooms Taxonomy :- Understand

(4.3) What are the applications of Randomness? [5.0]

CO :- C214.5

Blooms Taxonomy :- Understand
