BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - IV COMPUTER SCIENCE & ENGINEERING : SUMMER : 2024
SUBJECT: THEORY OF COMPUTATION

Day : Wednesday
Date : 22/05/2024

S-25581-2024

Time : 10:00 AM-01:00 PM
Max. Marks : 60

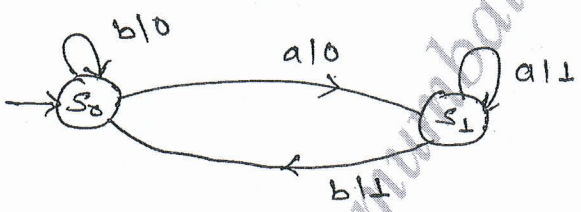
N.B.

1) All questions are **COMPULSORY**.
2) Figures to the **RIGHT** indicate **FULL** marks.
3) Assume suitable data **WHEREVER** necessary.
4) Draw neat diagrams **WHEREVER** necessary.

Q.1 Construct the DFA for the language of all strings that begin and end with same symbol, Σ(0,1). **(10)**

OR

Q.1 Convert the following Mealy Machine to Moore Machine **(10)**



Q.2 Construct the Finite Automata for following R.E. **(10)**

i) $(0+1(01)^*)^*$
ii) $1(01+10)^* +0\ (11+10)^*$

OR

Q.2 Write Definition of Regular Expression. Explain in detail applications of Regular Expression. **(10)**

Q.3 Write detailed note on Ambiguous Grammar with example **(10)**

OR

Q.3 Explain the following terms **(10)**

i) Unit production
ii) Useless symbol
iii) 'ε' production

Q.4 Construct PDA that accept the language by the following CFG **(10)**
$S \rightarrow SS \mid (S) \mid ()$

OR

Q.4 Design PDA for detection of even palindrome over {a,b} **(10)**

Q.5 Design a right shifting Turing Machine Σ(0,1) . **(10)**

OR

Q.5 Design TM to check whether a string over {a,b} contains equal no. of a's and b's. **(10)**

Q.6 Analyze the role of each phase of the compilation process and how error's are detected and handled. **(10)**

OR

Q.6 Define what complier is and how it differs from an interpreter. **(10)**

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