



THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

Re-accredited (2nd Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

Backlog Arrear Examination, March 2021

MAT 2406
AUTOMATA THEORY

TIME:3HRS
MARK:75

Answer any FIVE questions

5x15=75

1. Write a short note on parsing.
2. (a) Find the language generated by the grammar which has the production rules
 $S \rightarrow aA, A \rightarrow aS, S \rightarrow bB, B \rightarrow bS, A \rightarrow bC, C \rightarrow aB, B \rightarrow aC, C \rightarrow bA, A \rightarrow a, B \rightarrow b$
(b) Find a grammar generating the language $\{a^n b^n c^n | n \geq 1\}$
3. Define an ambiguous grammar and explain with an example.
4. Prove that any context free grammar can be converted to Greibach normal form.
5. Reduce the following Grammar to Chomsky normal form
 $S \rightarrow aAbB, A \rightarrow aA, A \rightarrow a, B \rightarrow bB, B \rightarrow b$
6. Given the non deterministic finite automata $M = \{K, I, \delta, q_0, F\}$ where $K = \{q_0, q_1\}$
 $I = \{a, b\}, F = \{q_1\}, \delta(q_0, a) = \{q_0, q_1\}, \delta(q_0, b) = \{q_0, q_1\}, \delta(q_1, a) = \emptyset,$
 $\delta(q_1, b) = \{q_0, q_1\}$ find an equivalent Deterministic finite state machine.
7. If L is a context-free language, then prove that there exists a PDA M such that $L = N(M)$.