MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

III B.Tech I Semester(MR 21) II Mid Question Bank 2023-24 (Subjective)

Subject: Formal Languages and Automata Theory (B0523)

Branch: Department of Computer Science and Engineering

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S NO.	Questions	Marks	BT Level	CO
	Module-III			
1	i) Design a PDA which accepts L = {WCW^r | W ∈ (a + b)*}. ii) Construct a PDA equivalent to the following grammar: S → aAA, A → aS | bS | a	3 2	L4 L3	3
	OR			
2	i) Design a PDA which accepts the language L = {$a^n b^n$ | n ≥ 1}. ii) Design a PDA that accepts L = {$a^3 b^n c^n$ |n ≥ 0}.	3 2	L4 L4	3

Module-IV

S No	Question	Marks	BT Level	CO
1	Design a TM for accepting strings of the language defined as { ww^r | w ∈ (0 + 1)*}.	5	L4	4
	OR			
2	i) Design a TM for finding 1's complement of a given binary number. ii) Design a TM to add two numbers a and b.	5	L4	4
3	Define Counter Machine and identify equivalence of Counter machines and Turing machine in detail.	5	L4	4
	OR			
4	Explain the importance of Turing Machines and also give descriptions of various types of Turing Machines with necessary examples.	5	L2	4

MODULE - V

S No	Question	Marks	BT Level	CO
1	i) Explain in detail about Linear bounded automata model. j) Identify the equivalence of LBA's and CSG's	2 3	L2 L5	5
	OR			
2	i) Describe recursive languages and recursively enumerable languages Explain the halting problem of TMs in detail.	5	L4	5
3	i. Define and explain Post's Correspondence Problem in detail ii. Obtain the solution for the following post's correspondence problem {{100, 1}, {0, 100}, {1, 00}}	2 3	L2 L3	5
	OR			
4	i. State and Explain P and NP class problems with example. ii. Differentiate between P class problems with NP Class problems.	3 2	L4 L4	5