DEPARTMENT OF

**INFORMATION SCIENCE & ENGINEERING**

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| Date | 17th July 2021 | Maximum Marks | 50 |
| Course Code | 18IS46 | Duration | 120 Min |
| Sem | IV Semester | Closed Book Online Test-1 | |
| **THEORY OF COMPUTATION** | | | |

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| **Sl. No.** | **Questions** | **M** | **BT** | **CO** |
| 1.a | Discuss the languages accepted by PDA with an example for each. | 05 | L2 | CO1 |
| 1.b | Define unrestricted grammar. Give unrestricted grammar to generate the language L = {ww | w {a , b}\*}. Show that string abbabb L. | 05 | L5 | CO3 |
| 2.a | Write the algorithm to convert a grammar to a PDA. Using the same, convert the grammar:  To a PDA that accepts the same language by empty stack. | 06 | L3 | CO3 |
| 2.b | Write a note on Chomsky hierarchy. | 04 | L1 | CO3 |
| 3.a | Design a PDA P such that L= L(P) = State whether P is deterministic or not. Show the sequence of ID’s to accept the string “abbaaa”. | 08 | L5 | CO1 |
| 3.b | Obtain Turing machine to accept the language  L= {w | w {a , b}\* and w ends with aba} | 02 | L3 | CO1 |
| 4 | Design a Turing machine to recognize strings of the form Where n is even. Trace the machine for the string ‘aabbcc’, ‘aabcc’, and ‘abc’. | 10 | L5 | CO1 |
| 5.a | Summarizein detail about multihead and multitape TM with an example. | 06 | L2 | CO1 |
| 5.b | Define DPDA. Construct DPDA equivalent to the DFA whose transition table is as below. Here A is Start state and B is final state.   |  |  |  | | --- | --- | --- | | **δ** | **a** | **b** | | **A** | **A** | **B** | | **B** | **C** | **A** | | **C** | **A** | **B** | | 04 | L4 | CO1 |

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

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| Marks Distribution | Particulars | | CO1 | CO2 | CO3 | CO4 | L1 | L2 | L3 | L4 | L5 | L6 |
| Test | Max Marks | 35 | -- | 15 | -- | 4 | 11 | 8 | 4 | 23 | -- |

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