

III B.TECH II SEMESTER I MID TERM EXAMINATION

AUTOMATA THEORY AND COMPILER DESIGN

(COMMON TO IT/CSE-DS)

PART-A 5X2=10

1. Define the central concepts of Automata theory. (CO1)

2. Define NFA with Example. (CO1)

3. Construct Automata for (a+b)ab\* (CO2)

4. Write about sentential forms in CFG. (CO2)

5. State the structure of PDA. (CO3)

PART-B 3X5=15

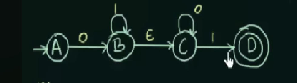
ANSWER ANY FOUR QUESTIONS FROM THE FOLLOWING

6. Construct DFA for the Languages containing (CO1)

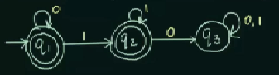
(i) Even no of 0’s and Even no of 1’s.

(ii) Accepts the strings starting with ‘0’ and ending with ‘1’

7. Convert the following Epsilon NFA to its equivalent NFA (CO1)



8. Find the Regular Expression for the DFA. (CO2)



9. Prove whether the Language L= {anbn| n>=1} is Regular or not using Pumping Lemma (CO2)

1. Define PDA and Show its Graphical Notation and construct a PDA that accepts all strings in the language L={on1n/n>=0) (CO3)

11. Convert the given CFG G=({S},{a.b},S,{P: S->aSb/ab}) to its equivalent PDA using the string “aaabbb” (CO3)

**SCHEME OF EVALUATION**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.NO** | **THEORY** | **MARKS** | **TOTAL** |
| 1 | **Part-A**  Define the central concepts of Automata theory | 2 | 10 |
| 2 | Define NFA with Example. | 2 |
| 3 | Construct Automata for (a+b)ab\* | 2 |
| 4 | Write about sentential forms in CFG | 2 |
| 5 | State the structure of PDA | 2 |
| 6 | **Part-B**  . Construct DFA for the Languages containing  (i) Even no of 0’s and Even no of 1’s.  (ii) Accepts the strings starting with ‘0’ and ending with ‘1’ | 2+3 |  |
| 7 | Convert the following Epsilon NFA to its equivalent NFA | 5 |  |
| 8 | Find the Regular Expression for the DFA. | 5 | 20 |
| 9 | Prove whether the Language L= {anbn| n>=1} is Regular or not using Pumping Lemma | 5 |  |
| 10 | Define PDA and Show its Graphical Notation and construct a PDA that accepts all strings in the language L={on1n/n>=0) | 5 |  |
| 11 | Convert the given CFG G=({S},{a.b},S,{P: S->aSb/ab}) to its equivalent PDA using the string “aaabbb” | 5 |  |
| **TOTAL MARKS** | | 30 | **30** |