Seat No.

Total No. of Pages : 2

OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Automata Theory

Sub. Code: 86167

Day and Date: Saturday ,06-12-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

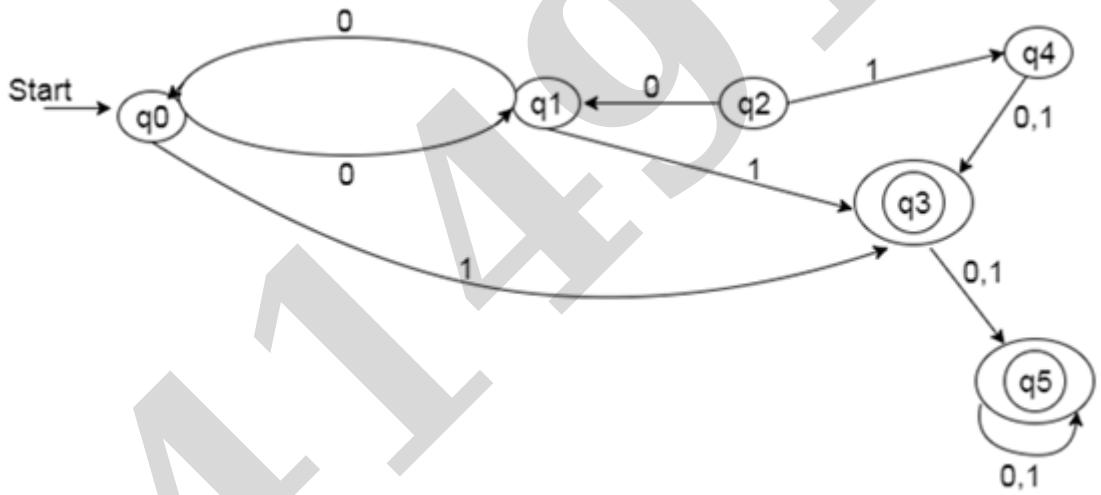
Instructions:

Special Inst.:
1. **Question no. 6 is compulsory**
2. **Solve any four questions from Q. No. 1 to Q. No.5**
3. **Assume suitable data wherever necessary**
4. **Figures to the right indicate full marks**

Q1) Attempt the following questions **[15]**

a) Explain the Grammar and also its types.

b) Minimize the FA:



Q2) Attempt the following **[15]**

a) Give Formal definition of Pushdown automata. 8

b)

Design PDA for L={$a^n b^m c^n$, where m,n>=1}

Q3) Attempt the folloing **[15]**

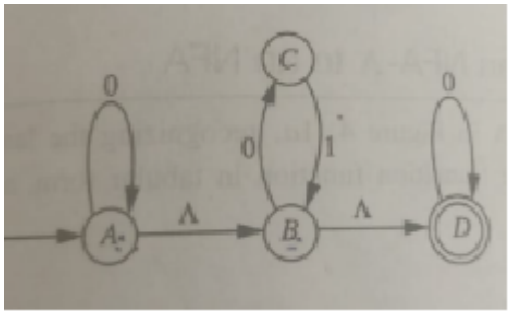
a)What is regular grammar ? Explain Left Linear grammar and Right linear grammar 8

b)Suppose, L (G) = {am bn | m > 0 and n ≥ 0}. write the grammar G which produces L(G). 7

Q4) Attempt the following questions **[15]**

a) Write down the difference between DFA and NFA. 8

b) Convert NFA-□ to an NFA and DFA for {0}* {01}*{0}*



Q5) Attempt the following **[15]**

a) Give Formal Definition of Turing Machine

b)

Design TM for $L=\{a^n b^n$, where $n>=1\}$

Q6) Write a short note on: (Any 2) **[10]**

i) Multi-tape Turing machine.

ii) Universal Turing machine.

iii) Markov Chains problem

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

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