PRESIDENCY UNIVERSITY, BENGALURU
SCHOOL OF ENGINEERING

Max Marks: 30 | Max Time: 55 Mins | Weightage: 15 % | **Set A**

TEST 3

II Semester 2016-2017 | Course: **COE A 208 Theory of Computation** | 20 April 2017

Instructions:

i. Answer all questions
ii. Read the question and answer accordingly

Part A

(5 x 2 M = 10 Marks)

1. When a CFG is said to be In CNF and GNF
2. Define NPDA formally
3. Define Unit production and Nullable production with respect to CFG
4. Eliminate useless , Nullable productions from the given Grammar
   S → AS| A|b
   A→ aA|a
   B→ab
5. Give two examples of two non-context free languages

Part B

(2 Q x 5 M= 10 Marks)

6. State pumping lemma for CFL and Sow that CFL's are not closed under intersection by example.
7. Prove that CFL's are not closed under difference, in general but closed under regular difference

Part C

(1Q x 10 M= 10 Marks)

8. Define the two types of acceptance of a language by PDA .Construct a NPDA that accepts the set of all palindromes of odd length over {0, 1}, by final state.

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TEST 2

II Semester 2016-2017 | Course: **COE A 208 Theory of Computation** | 23 March 2017

Instructions:

i. Answer all questions
ii. Read the question and answer accordingly

Part A

(5 x 2 M = 10 Marks)

1. Define CFG with an example.
2. Define Language generated by a grammar.
3. Define ambiguous grammar with an example.
4. For the given grammar, derive the word using leftmost derivation. **aaabbb**
   S→SS | aSb | bSa |^
5. In a parse tree, the internal vertices are labeled _____ and external vertices are labeled with _____

Part B

(2 Q x 5 M= 10 Marks)

6. Define Moore and Mealy Machine. When Moore machine and Mealy machine said to be equivalent. Convert the following Moore machine to Mealy machine

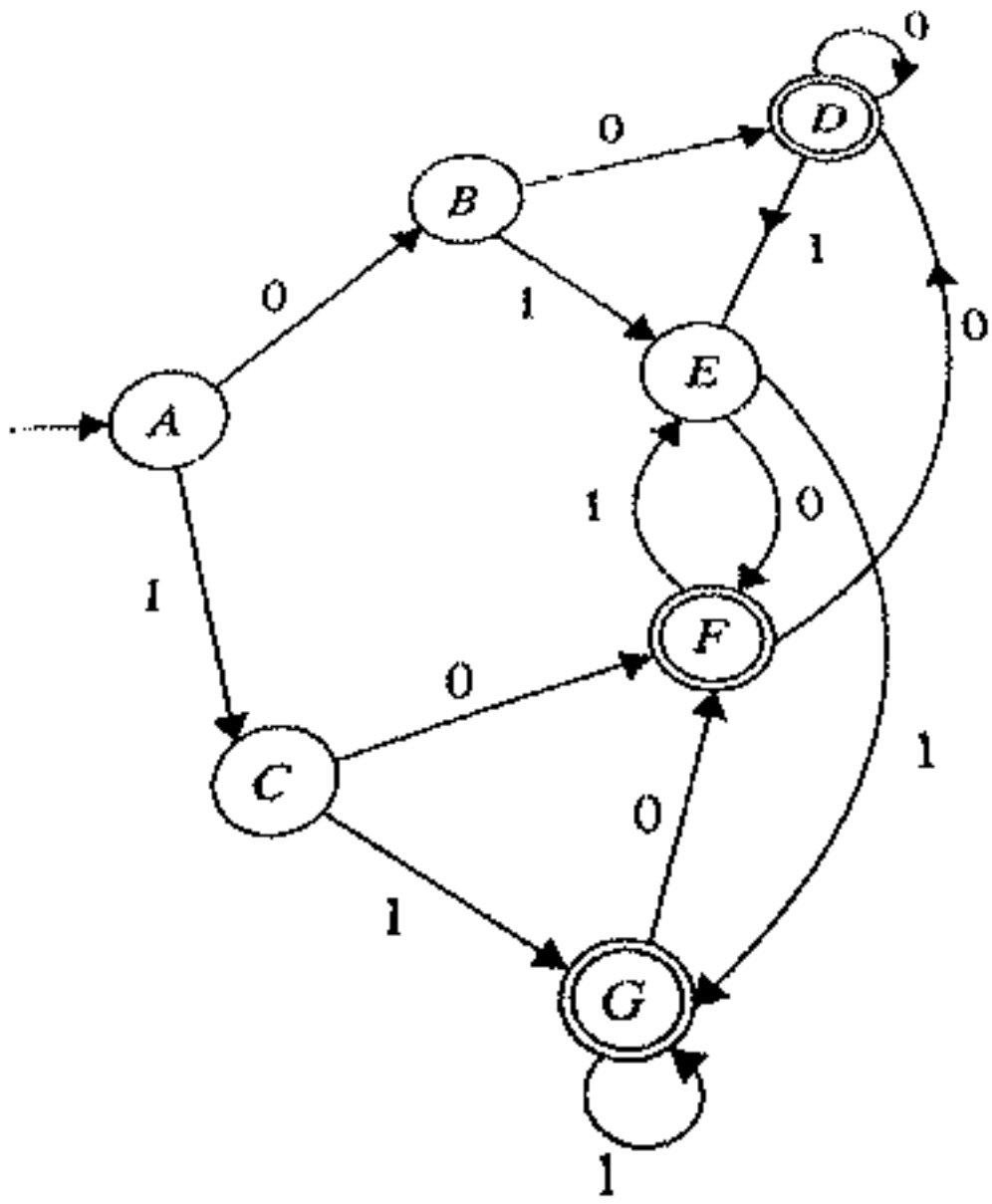
Sate	Input	Input	Output
	0	1	
q0	q0	q1	a
q1	q2	q1	b
q2	q2	q2	a

7. Prove that L1U L2 and L1 L2 are CFL's if L1 and L2 is a CFL.

Part C

(1 Q x 10 M= 10 Marks)

8. Minimize the following DFA.



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Max Marks: 30 | Max Time: 55 Mins | Weightage: 15 % | **Set A**

TEST 1

II Semester 2016-2017 | Course: **COE A 208 Theory of Computation** | 23 February 2017

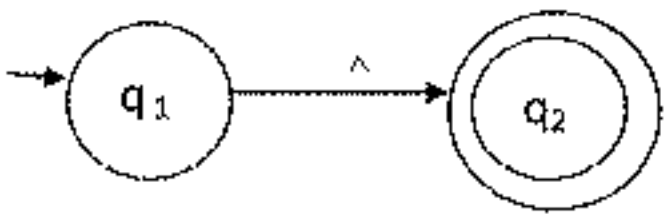
Instructions:

i. Answer all questions
ii. Read the question and answer accordingly

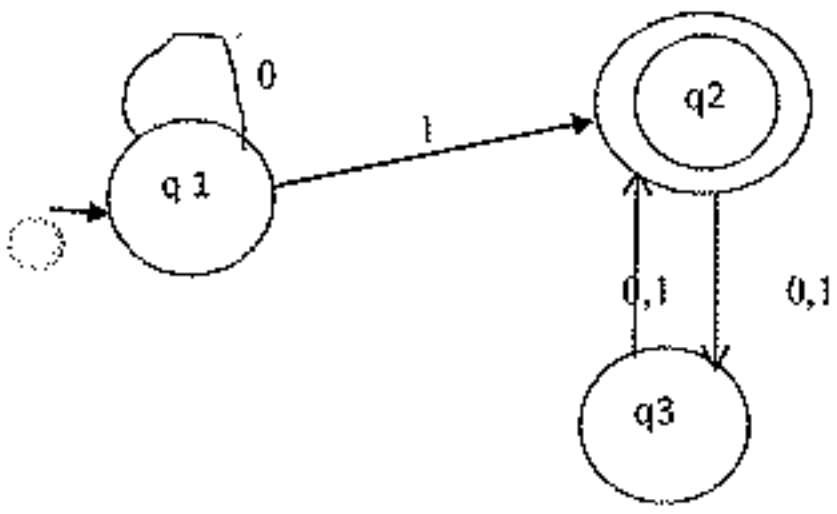
Part A

(2 x 1 M= 2 Marks)
(4 x 2 M= 8 Marks)

1. Formally define Non deterministic Finite Automata.
2. Find Λ- closure for q_1 state?

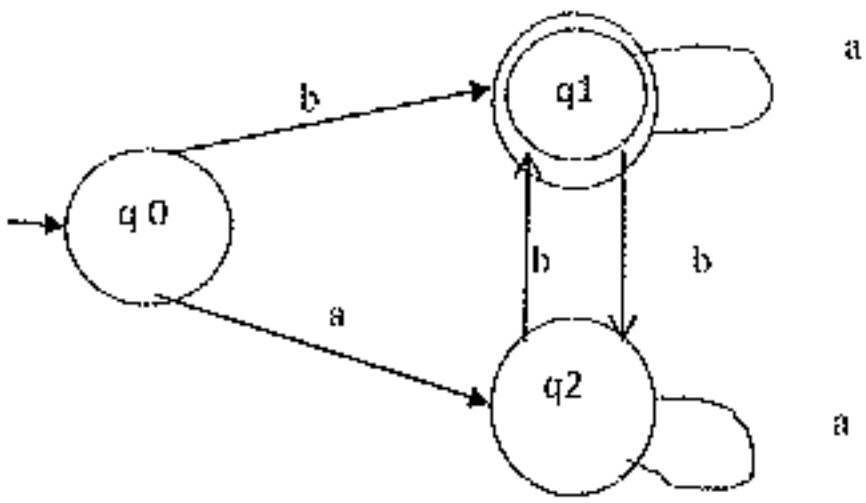


3. Write the Transition table for the given Transition diagram.



4. List at least two differences between DFA and NFA.
5. Using the properties of regular language prove that $L_1 \setminus L_2$ is regular.

6. Identify the language accepted by this machine.



Part B

(2 Q x 5 M= 10 Marks)

7. Construct an epsilon ^ NFA for the given regular expression.
(01 + 2*) 1

8. Construct an equivalent DFA with state diagram for the given NFA

State / Input	0	1
→ q_0	q_0	q_1
q_1	$\{q_1, q_2\}$	q_1
* q_2	q_2	$\{q_1, q_2\}$

Part C

(1 Q x 10 M= 10 Marks)

9. State Pumping Lemma and using pumping lemma prove that L={ WW^R / w is from the set {a,b}} language is not regular.

10 M