Paper CS402
Date 08-12-2012
Question No1:- Mark 2
Complementing machine along increment machine?

Question No 2:- Mark 2
Write RE for given NFA

Question No 3:- Mark 3
Write deference between Distinguishable and Indistinguishable?

Question No 4:- Mark 3
Construct NFA which not ending on a and b

Use minimum 3 states

Question No 5:- Mark 5
Write why FA deferent from NFA

Question No 6:- Mark 5
Write RE for given NFA

Paper By Oheena Shah

MY today paper is CS 402 Theory of Automata
Mcq's is mostly from Past Papers

Subjective

1) What is the first step to wirite regular expression corresponding to TG?(2 marks)

2) IF r1=(aa+bb) and r2=(a+b) than the language of r1r2? (2 marks)

3) How to convert NFA to FA through transition table? (3 marks)

4) At least one similarity and dismilarity of FA and NFA? (3 marks)

5) Build NFA equivilant to FA1 U FA2 where FA! and FA2 are given in question .(5 marks)

6) (i) Difference between TG ,GTG , and FA.

(ii) Through Digramatically we analyze that is TG or FA?(5 marks)

My Todays paper of cs402
20 mcqs

6 subjective question

Q#1
Read the given statement Yes/No justify your answer why
Is RE infinite?
Answer:- (Page 11)
No, All finite languages are regular.

An alphabet is concatenation of letters and is also called sigma?
Answer:- (Page 3)
No, Concatenation of finite number of letters from the alphabet is called a string.

Q#2: Makes a RE for a language does not have triple b or (bbb) at any place.
Answer:-
bb (a+b)* bb

Q#3
Check the given statements or correct or not if not then correct it.
1. String in regular language cannot be infinite **True**
2. Concatenation of finite letters from alphabets called sigma **False**
3. There cannot be more than one FA,s for same language. **False**

Q#4: Describe one difference and one similarity between DAF and NFA?[5]

Q5: NFA corresponding to the Closure of an FA [5]

Q6: construct an FA from concatenation of given two FA's?[5]

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mera aj cs402 main yeh aya tha 9/12/2012

(i) how to know that to which language a certain RE represents.

(ii) NFA with null string is represted by..... 1.NFA. lambda 2. **NFA-lambda** 3. NFAlambda
(iii) RE = ab* is ky agy is ka FA tha phir qustion tha the FA accept all the strings except..... 1. abab 2. abbb is tra k thy

(iv) 3 swal is tara k thy k FA ya TG bani hui hy aur banata hy yeh kis lanuage k liay hy . 4 op huty hain

(v) NFA given tha us ka FA bana tha

(vi) FA ginven tha closer ka NFA bana tha

mujy samjh nai a raha wo diagram yahan kaisy banao

(vii) 2 FA given thy ik FA construct karna tha

(viii) r1 = (a+b)*b and r2 = (a+b)*aa(a+b)* the r1+r2 will be 4 op thy

(ix) wht is transition in FA.

(x) NFA is type of ..... 1.FA 2. GTG 3. TG 4. none

CS402 MID TERM Current Papers Dec.-2012 Fall
MIDTERM SPRING 2012
CS402 – Theory of Automata
1) What is the function of mealy machine?
Answer:- (Page 60)
1's complementing and incrementing machines which are basically Mealy machines are very much helpful in computing.
The incrementing machine helps in building a machine that can perform the addition of binary numbers.

CS402 MID TERM Current Papers Dec.-2012 Fall
MIDTERM SPRING 2012
CS402 – Theory of Automata
Q. Point of Kleen Theory.
Answer:- (Page 25)
1. If a language can be accepted by an FA then it can be accepted by a TG as well.
2. If a language can be accepted by a TG then it can be expressed by an RE as well.
3. If a language can be expressed by a RE then it can be accepted by an FA as well.
Q. Difference and common between NFA & DFA
Answer:- (Page 25) Click here for detail
Difference
1-In FA Finite number of states, having one initial and some (maybe none) final states. While in NFA Finite many states with one initial and some final state.
2-In FA for each state and for each input letter there is a transition showing how to move from one state to

another while in NFA there may be more than one transition for certain letters and there may not be any transition for certain letters.
is not valid.∧ is valid while in NFA ∧3-In FA
Common
Finite set of input letters,

My current paper....
What is meant by 'Transition' in Finite automaton?.....2
Aik string given thi usko tokenize krna tha……2
Differentiate between distinguishable and indistinguishable string…….3
Let L be the language of string, defined over alphabet = {0,1} ending in 10. Draw diagram…….3
Construct NFA from the given FAs. Two FA were given……5
Two statement were given about Moore and mealy machine
Justify both statements. Statement yad nai……..5

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mery paper main 5 mark ka quistion lecture no 21 main page no 57 par jo last daygram hia wo wala quistion yad nae aap log khud dekh lain wahan se.
Q:2:FA or NFA main ek similarty or ek difference likhna tha.
Q3:ek FA diya howa tha us ka colisure likhna tha without additional state.
Q4: es quistion ki mujy smjh nae ae but fir bhi bta rahi hon k 20 box ko 5 state main pass karwana tha or har state jo thi wo non moving thi or end par dead state show karni thi es tarha kar k tha,
Q5:es main tha k mealy machine kis operator k sath kam karti hian.pata nae aap log end waly chapters achy se karna mostly mzqs or quistion whan se thy.
or merv leve bhi dua karna
papr kafi tough tha

CS402 PAPER ON 8TH DEC, 2012 SUBJECTIVE PORTION

1) What is the first step to wirite regular expression corresponding to TG?(2 marks)

2) IF r1=(aa+bb) and r2=(a+b) than the language of r1r2? (2 marks)

3) How to convert NFA to FA through transition table? (3 marks)

4) At least one similarity and dismilarity of FA and NFA? (3 marks)

5) Build NFA equivilant to FA1 U FA2 where FA! and FA2 are given in question .(5 marks)

6) (i) Difference between TG ,GTG , and FA. (ii) Through Digramatically we analyze that is TG or FA?(5 marks)

If you know the basics, you can pass. Many questions were very easy. Cover the basic concept of letters, strings, words, languages, regular expressions, check whether a given string is accepted by the given FA, definitions of FA, TG, GTG, NFA, determinism etc.

Look at the following questions for example. (If I couldn't remember the exact questions, I've replaced them with similar ones)

1. Automata is the plural of _____.

Ans: Automaton (I can't remember other options)

2. Every Fa is _____.

a) Non-deterministic

b) Deterministic

c) Deterministic & Non-deterministic

d) Depends on language

3. Every language that can be accepted by a TG, is also accepted by

Ans: FA (Other options were just non-sense)

4. An FA was given. The notation for start and final states was ‘an incoming arrow’ and ‘double circle’ instead of –ve and +ve signs. The question was “How many final states it has?” How simple! Anyway answer was two J

5. _____ can be accomplished using complementing as well as incrementing machine.

a) division b) complementing c) subtraction d) multiplication

6. A simple FA was given and you had to choose among the options: NFA, FA, TG or GTG

7. Consider the following RE: a(a+b)*b+b(a+b)*a

Which of the following words can not be generated by the given FA?

a) abbabb b) bab c) bababa d) aaaaaababababab

8. Every language that can be accepted by an FA then it can be accepted by a TG as well. What are the other two statements of Kleene’s Theorem. [2 Marks]

9. Consider the language containing “0” only. If alphabet is {0,1} draw an FA with a minimum of 3 states that accepts the given language. [2 or 3 Marks, can’t remember]

10. How transition table is used to convert NFA to FA? [3 Marks]

11. a) Write down a regular expression for a language that contains strings of length 6 that start with and end in same double letter. (Ans in my opinion is: aa(a+b)(a+b)aa+ bb(a+b)(a+b)bb

b) write RE for language containing only 0’s and a “111” or “11” and no more ones.

AnsL My answer is: 0*(111)0* + 0*(11)0* [5 Marks]

12. If (xx+xy) and (x+y) are two RE, then their union is

Again Simple Answer: (xx+xy) + (x+y)

13. One long question of 5 Marks from Moore and Mealy machine.

Two statements were given about chaniging Moore machine to Mealy machine. We had to tell giving reasons whether the statements were true or false.

I don’t remember rest of the paper but I can tell you again to cover the basics.

MY TODAY'S CS402 PAPER:

name the four diagrams used in aotomata.....2
what is kleen's star closure.....2
Distinguishable and indistinguishable strings.....3
Draw NFA for.. statement nai yad.....3

Draw NFA from given FA.....5
convert given NFA into FA.....5

All Mcqs from past papers.

Q. Point of Kleen Theory only two. Marks 2
Answer:
1. If a language can be accepted by an FA then it can be accepted by a TG as well.
2. If a language can be accepted by a TG then it can be expressed by an RE as well.
3. If a language can be expressed by a RE then it can be accepted by an FA as well.

2. The language can express in FA then why we need NFA. Justify your answer. (2)
Answer:
NFAs are interesting because we can express languages easier than FAs.
DFA can be understood as one machine. NFA can be understood as multiple little machines computing at t
same time.

3Draw a transition table fo the followinf diagram? 3

4.Draw transition table for concatenation of FA?3

5.Draw transition table for the following diagram at least 5 readings. 5

Ans page number 37

6.Draw Mealy machine for the following Moore machine? 5

Diagram of page 61 Moore machine

Ans.Diagram of page 62 Mealy machine

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my today paper too much easy

all mcqz from past paper 2 n 3 were new

subjective

mealy machine ka transition table bunana tha 5

draw FA coresponding to follwing NFA? Ans pg. 43 (5)

draw a transition table for conatenation of FA?

Asslam-O-Alaikum

Friends

90% MCQ'S from past paper.

Q# Lec#22 Application of incrementing.(ka function btana tha) [2 marks]

Q# Recursive definition. [2 marks]

Q#If there is no initial state in FA then that FA does not accept any language Discuss two situations when an FA does not accept any string not even the null string? [5 marks]

Ans in lecture #6 (page 15,16)

Q#Give the transition table (FA yaad nai kaise tha) [3 marks]

Q# Consider a part of the following TG To eliminate state 3 the above TG can be reduced to. lecture #11 (page #28) 2nd example (r1,r2....r9) [5 marks]

Q # Consider the following Moore machine... (output btane the) lecture # 22

(page # 61) ki 1st example.[3 marks]

My todays Paper Was Very easy ... All MCQs were from Past papers of Moaaz file And Subjective are As follows
BC120201113 CS402 My Todays Paper 9-6-2014
1) Why there is no concept of Final state In the Moor Machine?
Answer:- Pg55 Lecture 20

2) True or False??
"An NFA is a TG with unique start and a property of having single letter as label of transition".
Answer:- lecture 40 pg15
3) Consider coplimenting mealy machin and find ∑, L and if we run 0011010 in the machine then what will be out put??
Answer:- lecture 21 page 58

4) Find the NFA of the language consisting of 10 and defined on ∑= {0,1}
5) An NFA was given, was to convert in FA.
Answer:- Lecture 16
6) Find the Transition table of the Given FAs.
Answer:- Example on the pg36 Lecture 13

BC120201113 CS402 My Todays Paper 9-6-2014
1) Why there is no concept of Final state In the Moor Machine?

Answer:- Pg55 Lecture 20

2) True or False??

"An NFA is a TG with unique start and a property of having single letter as label of transition".

Answer:- lecture 40 pg15
3) Consider find ∑ and and if we run 0011010 in the machine then what will be out put??

Answer:- lecture 21 page 58

4) Find the NFA of the language consisting of 10 and defined on ∑= {0,1}

5) An NFA was given, was to convert in FA.

Answer:- Lecture 16
6) Find the Transition table of the Given FAs.

Answer:- Example on the pg36 Lecture 13

Today Paper
Total Questions = 26
Total Marks = 40
Total MCQs of 1 Mark = 20
Short Subjective Question of 2 Marks = 2
Subjective Question of 3 Marks = 2
Subjective Questions of 5 Marks = 2

What is meant by 'Transition' in Finite automaton?.....2
Aik string given thi usko tokenize krna tha……2
Differentiate between distinguishable and indistinguishable string.…….3
Let L be the language of string, defined over alphabet = {0,1} ending in 10. Draw diagram…….3
Construct NFA from the given FAs. Two FA were given……5
Two statement were given about Moore and mealy machine
Justify both statements. Statement …..5

My Today Paper (CS402) Spring 2015

MCqs were mostly from past papers

Q1. Any two points of Kleenes's Theorem?

Q2. The language can express in FA then why we need NFA? Justify your answer

Q3. Find the transition table of an FA3 corresponding to FA1+FA2, where FA1, FA2 were given.

Q4 Diagram were give, make a union of FA1 and FA2 with help of transition table.

Q5. Diagram were given, Transition table banai c..?

Q6. RE banana thi,

(a) segma $\sum$ = {0,1}, Null String

(b) segma $\sum$ = {0,1}, Find sigma 0110 anywhere

Best of Luck…

My today paper:

1. NFA of string ended with ab.
2. Moore machine.
3. NFA to FA.
4. FA to NFA.
5. FA to RE.
6. Diagram.
7. Kleene Theorem.
8. Are S* and S+ same? if any then justify your answer? (marks2)

   (ans: S* accept null string. S+ does not accept null string)
9. sigma={bba,ab}

   i. bbba ii. aabb ***iii. bbaab*** iv. aaab
10. not remember other question. mostly from starting chapters.

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my today paper

20 marks mcqs out of 15 from past papaers and other are new

20 marks subjective

draw FA from NFA with the help of transition table.5

draw NFA of (a+b)ab*a. 5

what operation we use for increment in mealy machine. 2

name other two names of operations For converting NFA to FA. 2

FA is given draw NFA. 3

aik or question tha identify relationship between Moore machine input and output moore machine given thi 3 buhat difficult question tha.

over all paper thora tough tha.

mera mashwara un students k liye jinhon ny abi cs402 ka paper dana hai wo last 3 chpters achy sy karain .

remember me in your papers plzzzzz

Today Paper @ 2 PM

Obj::

10 Mcqs from Moaz File ... 15 very easy and 15 were comceptual...

Sub::

1). Is there a proof of Pseudo Theorem? Exaplain. (2)

2). Suppose two inputs are provided to a NAND gate. What will be the value of inputs such that there NAND output would be zero? (2)

3). Three decidability problems w.r.t PDA? (3)

4). Aik PDA diagram given thi .. what language will it accept? (5)

Baqi question CFG or CFL par thay..

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mcqs and subjective from Moaz files dono files sari prepare kar k jana and
one question was
prove the given language wrt Myhill theorem
Second question was
Make the derivation tree of 0101010
Third question was
PRE(Q in R)
Fourth Qestion was
calculate the expression vo jo tree ha like *+*+ 3 1 +3 4 7 6
5th
convert the CFG into Chmosky form
6th
write the CGF for given FA
etc
Main idea is Moaz files full tayar kar k jao
and remember me in prayers for exams :)

Mcq's were easy...Mostly were from moaaz file
1-why the pumping has been used for the pumping lemma?(2)
2-What is top down parsing?(2)
3-What is the length of the string?Give 2 examples.(3)
Rest of paper was from CFG... so prepare CFG very well.
All the best...:)

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mcqs sb moaaz ki file sy thy almost

1: write the prefix expression from the given diagram then calculate the infix from prefix.. 3 marks ka tha

2: R and q ki values dy kr bola tha k inka PRE(Q in R) find kr dain 3 marks ka ye b
3: convert the given CFG into CNF form 3 marks
4: explain the pumping lemma part two 5 marks
or yad ni hy lakin zyiada tar CFG and Turing machines k topics thy
best of luck all of you

My today paper at 08:30 am

1. what is the difference between (a,b) and (a+b)? 2 marks

2. write any of two statments of kleen's theorem? 2 marks

3. given diagram of NFA was to convert in FA diagram 3 marks

5. given two regular expressions r1 =(a+b)((a+b)(ab))* and r2=(a+b)*b was to draw corresponding FA's and after to draw table and diagram of r1+r2 by UNION? 5 marks

6. there was an NFA and was to convert to FA by transition table?(method III) 5 marks

aik aur bhi 3 marks ka tha but wo yad nahi. best of luck

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my paper today of CS402

Q1. Describe the POP operation and draw symbol for POP state in context of Push down stack

Solution

POP is an operation that takes out a letter from the top of the STACK. The rest of the letters are moved one location up. POP state is expressed as

Q2. Draw the PDA for a give CFG.
Q3 Describe language of the given PDA
Q4 calculate the infix and prefix expression for the following tree

Solution
Prefix *+*+1 2+3 4 7 6) = *+*+1 2+3 4 7 6 = *+*3+3 4 7 6
= *+*3 7 7 6 = *+21 7 6 = *28 6 = 168
And infix notation is as below
(((1+2)*(3+4)+7)*6)

Q5. Explain Indistinguishable strings
Sol

Q6 what are live and dead productions explain?

Live production: A production of the form nonterminal → string of two nonterminals is called a live production. Dead production: A production of the form nonterminal → terminal is called a dead production.

Q7
Derive aababba from a given CFG
aX|bX|^◊aXa X◊S

Solution
Using
aXa◊S
aX◊aaXa using X◊S
aX◊aaaXa using X◊S
bX◊aaabXa using X◊S
aX◊aaabaXa using X◊S
bX◊aaababXa using X◊S

bX◊aaababbXa using X◊S
^◊aaababba using X◊S

Q8 remove null productions of the CFG
aX|bX|^◊aX X◊S

Solution
aX|bX|a|b◊aX|a X◊S

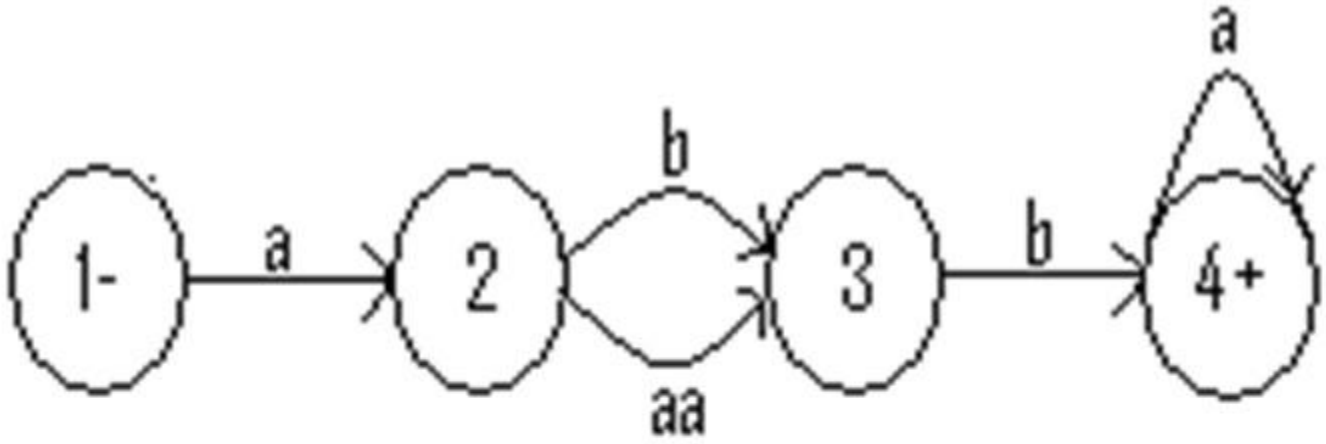
Q9. Draw NFA for language [bab, abab. aabab. bbabab……..]

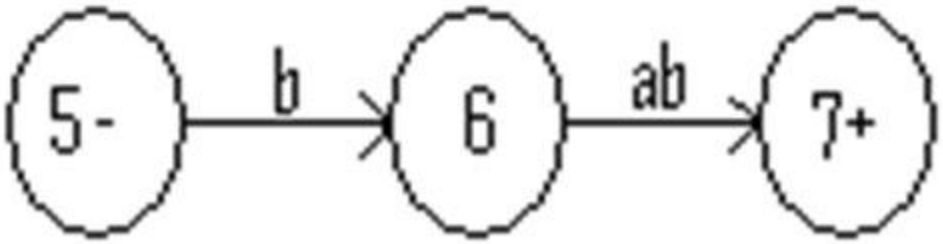
Q10. Is string of odd zeros a regular? Explain

Q11 write the regular expression for the given turing machine

Q12 what is a semi word? Explain

Question no. 21





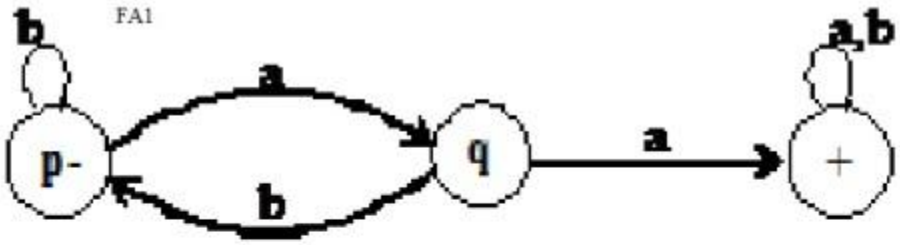
Using Kleene's theorem, modify the above transition graph to have one initial and final state each.

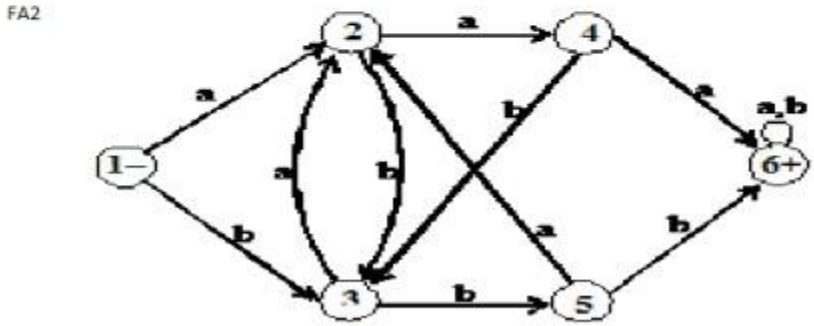
Question: 22: Let us consider incrementing mealy machine. What operations could be performed using the incrementing Mealy machine?

Question: 23: If a language can be expressed in the form of FA then why it is needed to use NFA? Justify your answer with solid reason? Hint: Conversion of NFA into FA

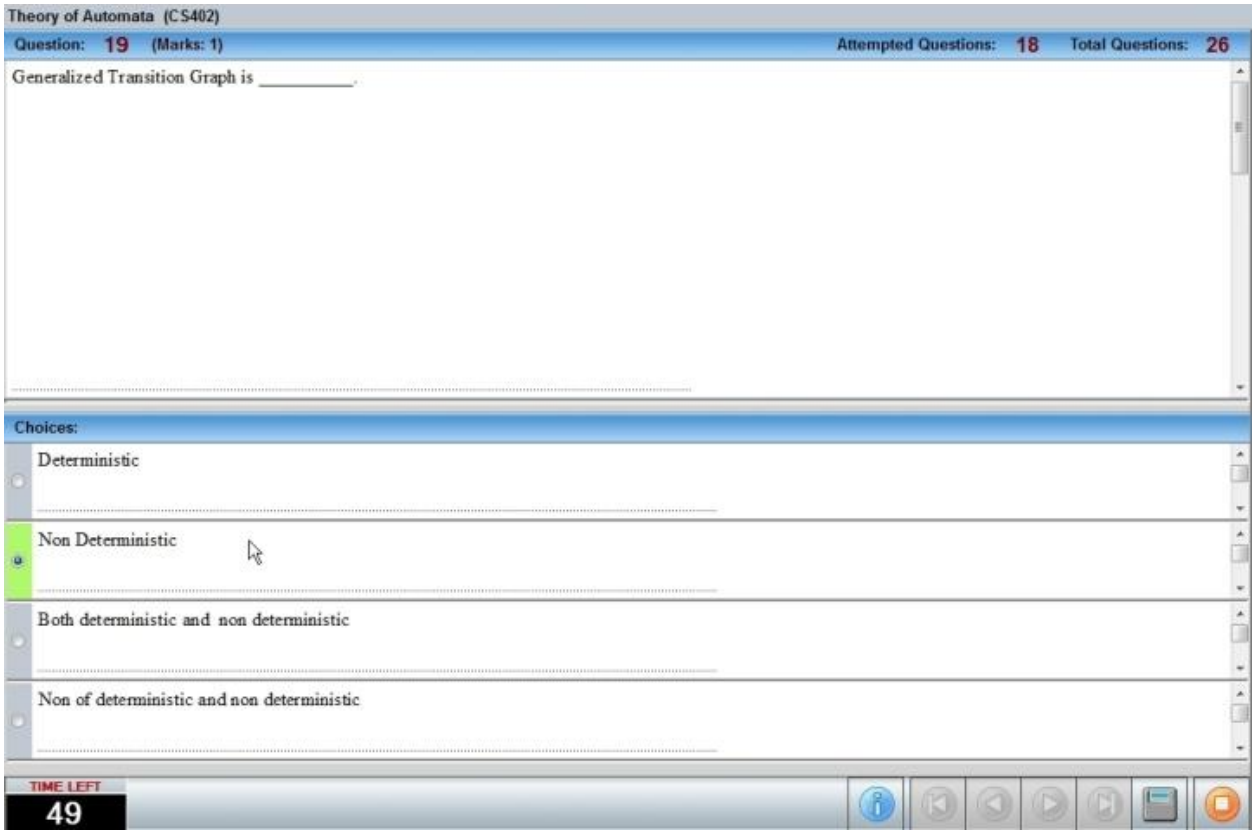
Question: 24: If there is no initial state in an FA, then that FA does not accept any language, similarly discuss two other situations when an FA does not accept any string, Not even NULL string.

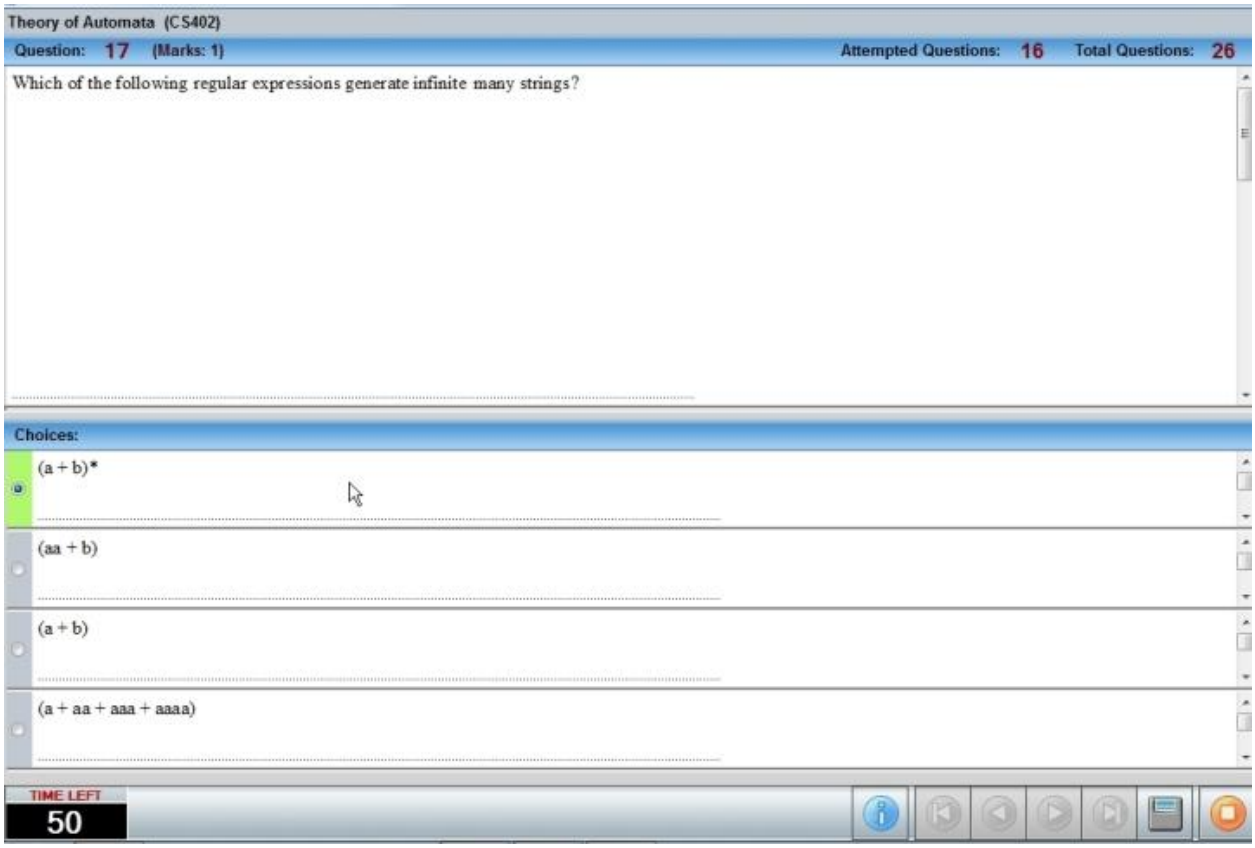
Question: 25: Build an NFA equivalent to $FA_1 U FA_2$, where FA_1, FA_2 are given below.





Question: 26: Determine Regular Expression (RE) for the following Non-deterministic Finite Automaton (NFA):


Theory of Automata (CS402)
Question: 19 (Marks: 1)
Attempted Questions: 18
Total Questions: 26
Generalized Transition Graph is _____.
Choices:
Deterministic
Non Deterministic
Both deterministic and non deterministic
Non of deterministic and non deterministic
TIME LEFT
49


Theory of Automata (CS402)
Question: 17 (Marks: 1)
Attempted Questions: 16
Total Questions: 26
Which of the following regular expressions generate infinite many strings?
Choices:
(a + b)*
(aa + b)
(a + b)
(a + aa + aaa + aaaa)
TIME LEFT
50

Theory of Automata (CS402)

Question: 16 (Marks: 1) Attempted Questions: 15 Total Questions: 26

Finite Automaton (FA) and Nondeterministic Finite Automaton (NFA) are equivalent if

Choices:

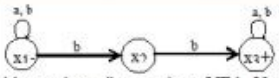
- FA and NFA accept the same language
- FA shape is same like an NFA
- FA accept the null string also

  FA accept the null string also
- NFA accept the null string also

TIME LEFT 50

Theory of Automata (CS402)

Question: 15 (Marks: 1) Attempted Questions: 14 Total Questions: 26



Above given diagram is an NFA. If we convert it into an FA using transition table, then new FA will consist of _____ number of states.

Choices:

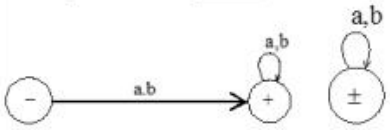
- 6
- 5
- 4
- 3

TIME LEFT 51

Theory of Automata (CS402)

Question: 14 (Marks: 1) Attempted Questions: 13 Total Questions: 26

Following two FA's are _____.



Choices:

- equivalent
- non-equivalent
- FA2 is invalid
- cannot be determined

TIME LEFT 51

Theory of Automata (CS402)

Question: 10 (Marks: 1) Attempted Questions: 9 Total Questions: 26

NFA stands for _____

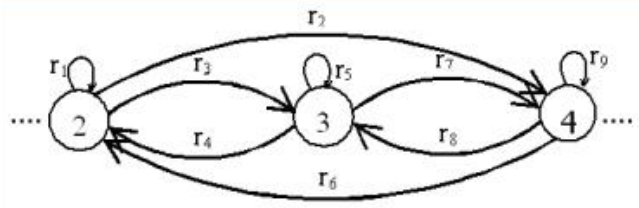
Choices:

- Non Finite Automaton
- Nondeterministic Finite automaton
- None of the given options
- Null Finite Automaton

TIME LEFT 53

Theory of Automata (CS402)

Question: 8 (Marks: 1) Attempted Questions: 7 Total Questions: 26



What will be the RE of the above given TG?

Choices:

(r1 +r3 r5* r4)+(r2 +r3 r5* r7)(r9 +r8 r5* r7)(r6 +r8 r5* r4)

(r1 +r3 r5* r4)+(r2 +r3 r5* r7)(r9 +r8 r5* r7)*(r6 +r8 r5* r4)

(r1 +r3 r5 r4)+(r2 +r3 r5* r7)(r9 +r8 r5* r7)*(r6 +r8 r5* r4)

(r1 +r2 r4* r3)+(r2 +r3 r5* r7)(r9 +r8 r5* r7)(r6 +r8 r5* r4)

TIME LEFT 53

Theory of Automata (CS402)

Question: 6 (Marks: 1) Attempted Questions: 5 Total Questions: 26

Using tree structure, final states are represented by

Choices:

*

-

using double circle

+

TIME LEFT 57

Theory of Automata (CS402)

Question: 5 (Marks: 1) Attempted Questions: 4 Total Questions: 26

In TG, there may be a _____ for null string.

Choices:

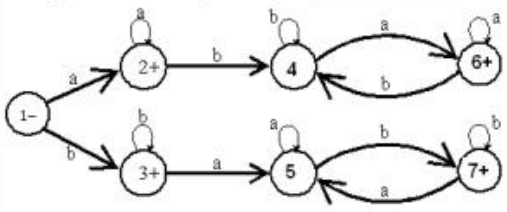
- data
- transition
- figure
- value

TIME LEFT 57

Theory of Automata (CS402)

Question: 4 (Marks: 1) Attempted Questions: 3 Total Questions: 26

Below given FA can be expressed by the _____ RE.



Choices:

- (a+b)+a(a + b)*a + b(a + b)*b
- a(a + b)*a + b(a + b)*b
- a(a + b)*a
- b(a + b)*b

TIME LEFT 57