Midterm Exam Results for Aryan Jigneshbhai Bhagat (he/him/his)

ⓘ Correct answers are no longer available.

Score for this attempt: 125 out of 140

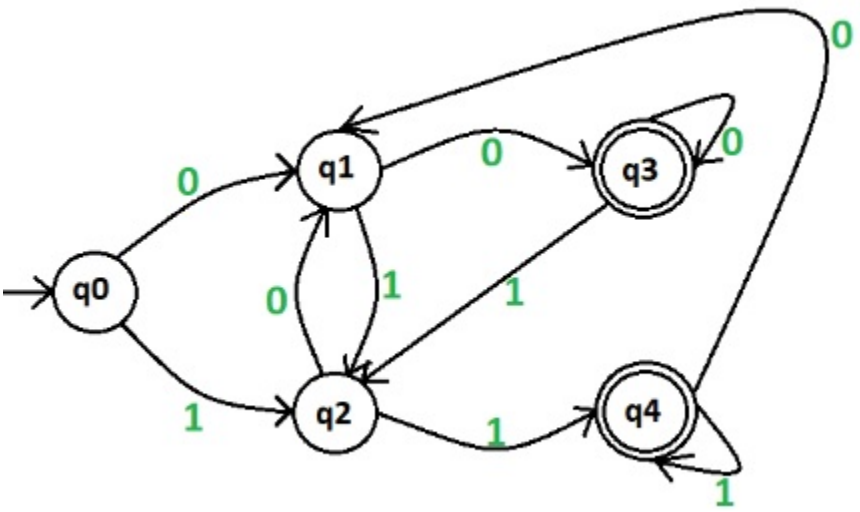
Submitted Mar 16 at 6:18pm

This attempt took 33 minutes.

Question 1

20 / 20 pts

Consider the following Deterministic Finite Automaton (DFA) with the 5-tuple of $(Q, \Sigma, q_0, F, \delta)$:



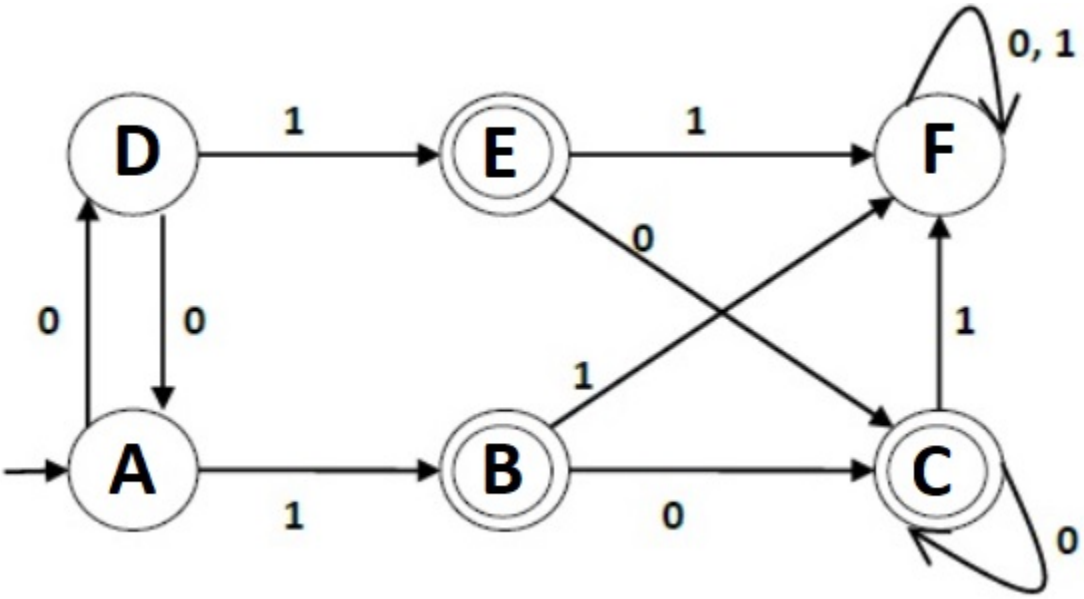
Which sequences are NOT accepted, choose all that applies.

- [x] 10001
- [ ] 0000100
- [x] 010110
- [ ] 110011
- [x] 101010
- [ ] 00110011

1100110

Question 2
10 / 10 pts

During the process of the minimization of the following DFA using Equivalence Theorem,



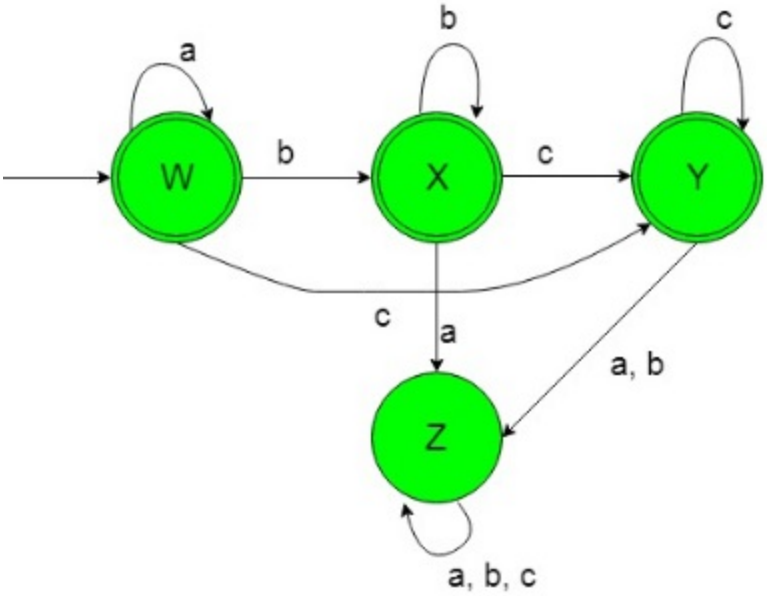
What are the 1-equivalence partition sets?

Your Answer:

{A,D}{F}{B,C,E}

Question 3
10 / 10 pts

The following is a Deterministic Finite Automaton (DFA) for the input alphabet {a,b,c}:



What kinds of strings are accepted in this DFA?

- (●) Strings in the form of $a^m b^n c^k$ where $m,n,k \geq 0$
- ( ) Strings in the form of $a^n b^{n+1} c^{n+2}$ where $n \geq 0$
- ( ) Strings in the form of $a^{n+2} b^{n+1} c^n$ where $n \geq 0$
- ( ) None of the answers are accepted

Question 4

10 / 10 pts

If the language L is defined as L = {01,1,100}, select every answer that does NOT belongs to the L*:

- [ ] 110001110011
- [ ] 101011100
- [x] 100001110001
- [ ] 0111000111111

PartialQuestion 5

15 / 20 pts

Select the equivalence relation. Select all the applies.

- [x] If A={1,2,3}, then relation $R: A \rightarrow A$ such that R={(1,3),(3,3),(1,1),(2,2),(3,1)}
- [x] If N={1,2,3,...}, then relation $R: N \rightarrow N$ such that R={(a,b)| a=b}
- [ ] If N={1,2,3,...}, then relation $R: N \rightarrow N$ such that R={(a,b)| a>b}

- [ ] If N={1,2,3,...}, then relation $R:N \to N$ such that R={(a,b)| $a \leq b$}
  If A={1,2}, then relation $R:A \to A$ such that R={(1,2),(2,1)}
- [ ]
- [x] If A is the set of all pentagons, then relation $R:A \to A$ such that R={(a,b)|a is similar to b}

Question 6
15 / 15 pts

Fill the blank with correct number:

If A= {a,b,c} and B = {c,d}, then the set $A \cap B$ has 1 partitions, and the set $A \cup B$ has 15 partitions while the set $A - B$ has 2 partitions.

Answer 1:
1
Answer 2:
15
Answer 3:
2

Question 7
10 / 10 pts
Select the partitions of the set **{2,*,c,+}**:

- [ ] {{2,*},{},{c},{+}}
- [x] {{2,*},{c,+}}
- [ ] {{2,*,c,+},{c}}
- [ ] {{2,*},{+}}
- [ ] {{2,*},{},{c},{+}}
- [ ] {{2},{*},{},{c},{+}}
- [x] {{c},{+},{2},{*}}
- [ ] {{2,*,c,+},{}}

Question 8

5 / 5 pts

If a function f from A to B is both **one-to-one** and **onto** B, then this function is what?

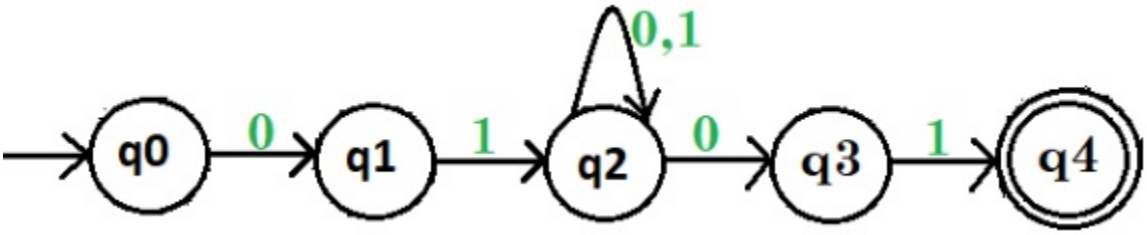
Your Answer:

Bijection

PartialQuestion 9

10 / 20 pts

Consider the following Non-deterministic Finite Automaton (NFA) with the 5-tuple of (Q,Σ,q_0,F,δ):



Which statement(s) are true for this NFA? Select all that applies.

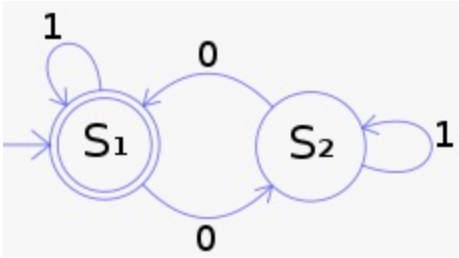
Note: a^n means concatenating a with itself n times.

- [ ] All accepted strings must have 0101 in their sequence.
- [ ] All accepted strings must have the length of more than 4.
- [ ] 01xxxxxxx1 is an accepted string where x can be any member of input alphabet
- [ ] 010^n1 is an accepted string where n>8
- [x]
- [ ] The equivalent DFA of this NFA will have one state more than this NFA.

Question 10

20 / 20 pts

In the following Deterministic Finite Automaton (DFA) with the input alphabet {0,1}:



What strings are accepted. Mark all correct answers.

- [x] empty string
- [x] 1
- [x] 00111111
- [x] 110011100
- [ ] 011111
- [ ] 101010

Quiz Score: 125 out of 140