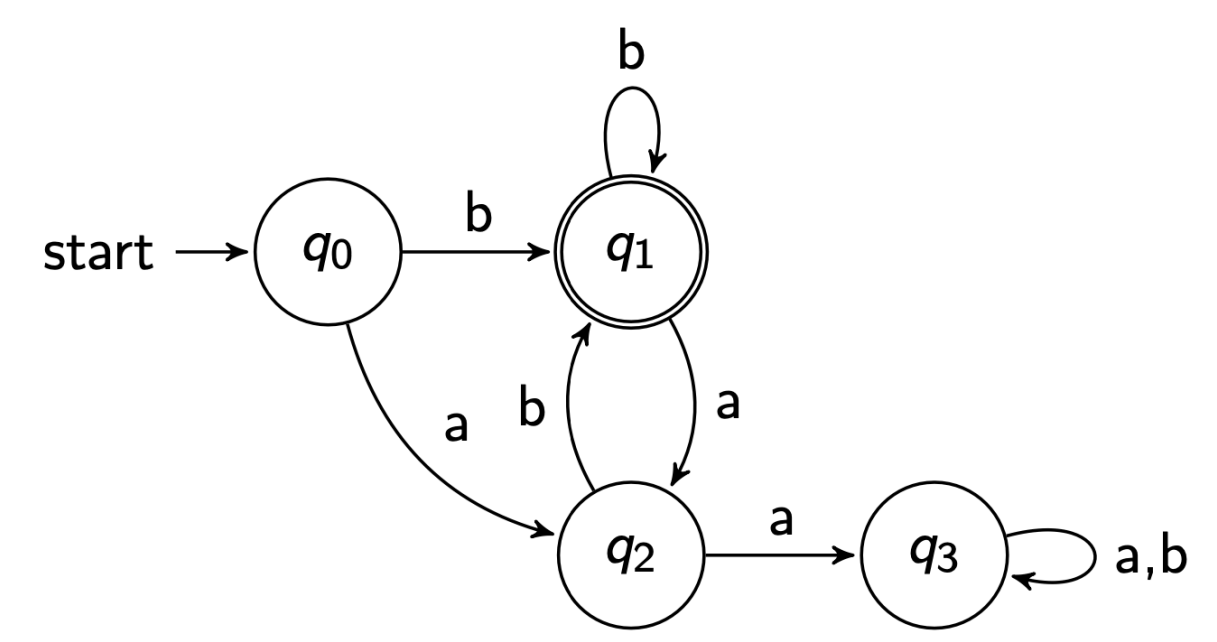
Started on	Thursday, 16 February 2023, 4:01 PM
State	Finished
Completed on	Thursday, 16 February 2023, 4:10 PM
Time taken	9 mins 56 secs
Grade	**4.00** out of 5.00 (**80**%)

Question **1**

Correct

Mark 0.50 out of 0.50

Which of the following languages over the Σ = {a, b} fully describes the represented FSA?



a. L = {x ∈ Σ* | x starts with a}

b. L = {x ∈ Σ* | x ends with b and does not contain the substring aa} ✓

c. L = {x ∈ Σ* | x ends with ab}

d. L = {x ∈ Σ* | x ends with b}

The correct answer is: L = {x ∈ Σ* | x ends with b and does not contain the substring aa}

Question **2**

Incorrect

Mark 0.00 out of 0.50

Which statement is correct?

- {ε} is a language over any alphabet
- If language L has at least 1 nonempty word, Then L* is an infinite language. ✗
- All of the above
- None of the above

The correct answer is:
All of the above

Question **3**

Correct

Mark 0.50 out of 0.50

Which statements about FSA is/are TRUE?

- a. A "trap" state cannot be final ✓
- b. FSA is more powerful than Turing Machine
- c. The initial state cannot be a final state at the same time
- d. An FSA should have a finite set of states ✓
- e. An FSA with a total transition function is called complete ✓

The correct answers are:
An FSA with a total transition function is called complete,

A "trap" state cannot be final,

An FSA should have a finite set of states

Question **4**

Correct

Mark 0.50 out of 0.50

Set U contains the letters in the word "INNOPOLIS". Which of the following is/are set U?

- [ ] U = {i,n,n,o,p,l,i,s}
- [x] U = {I,N,N,O,P,O,L,I,S} ✓
- [x] U = {S,I,O,P,N,L} ✓
- [ ] All of the above
- [ ] None of the above

The correct answers are:
U = {I,N,N,O,P,O,L,I,S},

U = {S,I,O,P,N,L}

Question **5**

Correct

Mark 0.50 out of 0.50

Let L = {0, 01, 001}. Find L^2

- (•) {00, 001, 0001, 010, 0101, 01001, 0010, 00101, 001001} ✓
- ( ) {00, 001, 0001, 010, 0101, 01001, 0010, 00101, 001111}
- ( ) {00, 0101, 001001}
- ( ) All of above
- ( ) None of above

The correct answer is:
{00, 001, 0001, 010, 0101, 01001, 0010, 00101, 001001}

Question 6

Correct

Mark 0.50 out of 0.50

The full string of (10)^3 is...

- 010101
- 000111
- 111000
- 101010 ✓
- All of the above

The correct answer is:
101010

Question 7

Correct

Mark 0.50 out of 0.50

If U = {1, 3, 5, 7, 9} and V = {2, 3, 5, 7}, what is U ∩ V?

- {3,5,7} ✓
- {1,2,3,5,7,9}
- {1,7,9}
- ∅
- {1,3,5,7,9}

The correct answer is:
{3,5,7}

Question **8**

Correct

Mark 0.50 out of 0.50

A⊆B means that...

- A and B have exactly the same elements
- A = B
- Every element of A is an element of B ✓
- Every element of B is an element of A
- A and B have the same number of elements

The correct answer is:
Every element of A is an element of B

Question **9**

Incorrect

Mark 0.00 out of 0.50

If L*= L , then which of those is L?

- L = {0, 1, 00, 11, 000, 111, ...}
- L = {w | w ∈ Σ*, |w|≥ 1} ✗
- L = {w | w ∈ Σ*, |w|= 5}
- L = {w | w ∈ Σ* |w|= 2}
- L = {0, 1}*

The correct answer is:
L = {0, 1}*

Question **10**

Correct

Mark 0.50 out of 0.50

For a set A, the power set P(A) has exactly 2^n elements, where n is the cardinality of A

Select one:

- True ✓
- False

The correct answer is 'True'.