Started on	Friday, 12 August 2022, 2:16 PM
State	Finished
Completed on	Friday, 12 August 2022, 2:26 PM
Time taken	10 mins
Marks	7.50/16.00
Grade	**4.69** out of 10.00 (**47**%)

Question **1**

Correct

Mark 1.00 out of 1.00

$$(0+1)^*01(0+1)^* + 1^*0^* = (0+1)^*$$

Select one:

🔘 True ✔

⚪ False

The correct answer is 'True'.

Question **2**

Correct

Mark 1.00 out of 1.00

Since finite languages are regular, all regular languages must be finite.

Select one:

⚪ True

🔘 False ✔

The correct answer is 'False'.

Question **3**

Correct

Mark 1.00 out of 1.00

Is the string 011110011 accepted by the following DFA

$\delta(q_0, 0) = q_1$, $\delta(q_0, 1) = q_3$, $\delta(q_1, 1) = q_2$, $\delta(q_1, 0) = q_3$, $\delta(q_2, 0) = q_2$, $\delta(q_2, 1) = q_0$, $\delta(q_3, 1) = q_2$, $\delta(q_3, 0) = q_3$

where q_0 and q_3 are the initial and final states, respectively.

Select one:

◉ True ✔

○ False

The correct answer is 'True'.

Question **4**

Correct

Mark 1.00 out of 1.00

Transition function δ of NFA is given by

○ a. $\delta : \Sigma \times Q \rightarrow Q$

○ b. $\delta : \Sigma \times Q \cup \{\lambda\} \rightarrow 2^Q$

◉ c. $\delta : \Sigma \times Q \rightarrow 2^Q$ ✔

○ d. $\delta : \Sigma \times Q \cup \{\lambda\} \rightarrow Q$

Your answer is correct.

The correct answer is:
$\delta : \Sigma \times Q \rightarrow 2^Q$

Question **5**

Incorrect

Mark 0.00 out of 1.00

If P, Q, R are regular expressions such that $\lambda \notin P$, then the equation
$R = PR + Q$ has a solution

○ a. $R = QP^*$ ✖

○ b. $R = P^*Q$

Your answer is incorrect.

The correct answer is:
$R = P^*Q$

Question **6**

Incorrect

Mark 0.00 out of 1.00

A transition table is given for a λ-NFA with 7 states (1 is the initial state)

q	a	b	λ
1	{5}	∅	{4}
2	{1}	∅	∅
3	∅	{2}	∅
4	∅	{7}	{3}
5	∅	∅	{1}
6	∅	{5}	{4}
7	{6}	∅	∅

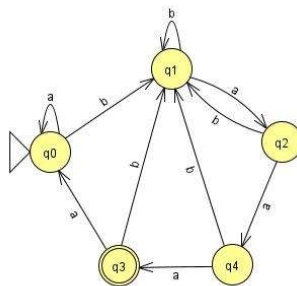Calculate $\hat{\delta}(1, ba)$.

Answer: 2520 ✖

The correct answer is: {1,6}

Question **7**

Correct

Mark 1.00 out of 1.00

The language accepted by the following DFA is

○ a. $L = \{wbaa : w \in \{a, b\}^*\}$

○ b. $\backslash Emptyset$

○ c. $L = \{w_1 w_2 baaa : w_1 \in \{a, b\}^*, w_2 \in (ab)^*\}$

◉ d. $L = \{a^n b^m aaa : n \geq 0, m \geq 1\}$ ✔

Your answer is correct.

The correct answers are:
$L = \{wbaa : w \in \{a, b\}^*\}$

,

$L = \{a^n b^m aaa : n \geq 0, m \geq 1\}$

,

$L = \{w_1 w_2 baaa : w_1 \in \{a, b\}^*, w_2 \in (ab)^*\}$

Question **8**

Incorrect

Mark 0.00 out of 1.00

Non-determinism adds extra functionality to the finite automata.
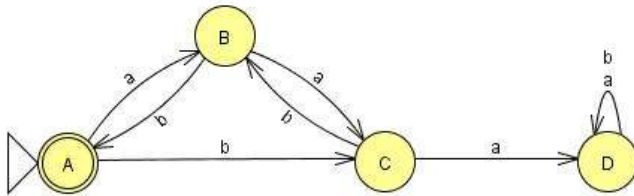
Select one:
- ⊙ True ✖
- ○ False

The correct answer is 'False'.

Question **9**

Incorrect

Mark 0.00 out of 4.00

Convert the given DFA into a regular expression by finding out the solutions for each of the states.
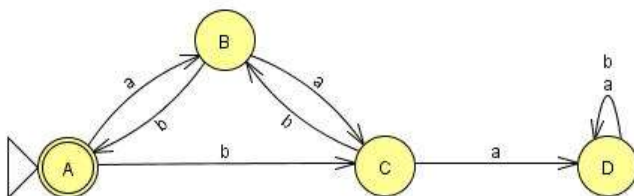
A= Empty set   ✖

B= (b(ab)*b) A   ✖

C= ((ab)*b) A   ✖

D= bb(ab)*b A   ✖

Your answer is incorrect.

The correct answer is:

Convert the given DFA into a regular expression by finding out the solutions for each of the states.

A=[(a(ab)*b+bb(ab)*b)*]

B=[((ab)*b) A]

C=[(b(ab)*b) A]

D=[Empty set]

Question **10**

Correct

Mark 1.00 out of 1.00

If $L_1 = L(a^*baa^*)$ and $L_2 = L(ab^*)$ then L_1/L_2 is

where $L_1/L_2 = \{x : xy \in L_1 \text{ for some } y \in L_2\}$

○ a. $L(aa^*b)$

◉ b. $L(a^*ba^*)$ ✔

○ c. $\emptyset$

Your answer is correct.

The correct answer is:
$L(a^*ba^*)$

Question **11**

Incorrect

Mark 0.00 out of 1.00

It is possible to construct a finite automaton that accepts strings over the binary alphabet $\{a, b\}$ such that run of a and run of b has same length.

Select one:

◉ True ✘

○ False

The correct answer is 'False'.

Question **12**

Partially correct

Mark 0.50 out of 1.00

The regular expression for the language consisting of all strings of even length over $\{0, 1\}$ is

- ☐ a. $((0+1)(0+1))^*$
- ☑ b. $(00+01+10+11)^*$ ✔

Your answer is partially correct.

You have correctly selected 1.
The correct answers are:
$(00+01+10+11)^*$

,

$((0+1)(0+1))^*$

Question **13**

Correct

Mark 1.00 out of 1.00

The set of all states that can be reached from that state to all the states with input λ is called

Answer: | E closure | ✖

The correct answer is: lambda-closure

Comment:

◄ Quiz 1

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Quiz 2 ►