

Q.No=answer page

1=a 10

2=c 14

3=c 15

4=d 19

5=a 20

6=more than 1

7=a 9

8=c moazz

9=d 9

10=c repeat

11=NFA 45

12=b 43

13=c 42

14=a repeat

15=c idea

16=a 60

17=d

18=c 7

19=bab

20=noidea

Question No : 1 of 26

Marks: 1 (Budgeted Time 1 Min)

If L1 is expressed by  $r1$ , then the language expressed by  $r1^*$  will be \_\_\_\_\_

Answer ( Please select your correct option )

- Regular
- Ir-regular
- Infinite
- Such language does not exist

**Made By: Waqar Siddhu**

Question No : 2 of 26

Marks: 1 (Budgeted Time 1 Min)

"One language can be expressed by \_\_\_\_\_ FA".

Answer ( Please select your correct option )

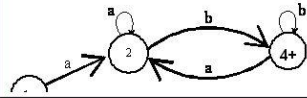
- only one
- any
- more than one
- only two

**Made By: Waqar Siddhu**

Question No : 3 of 26

Marks: 1 (Budgeted Time 1 Min)

Below given FA can be expressed by the \_\_\_\_\_ RE.



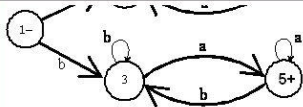
Answer ( Please select your correct option )

- $(a+b)+a(a+b)^*a+b(a+b)^*b$
- $a(a+b)^*a+b(a+b)^*b$
- $a(a+b)^*b+b(a+b)^*a$
- $b(a+b)^*a+a(a+b)^*b$

**Made By: Waqar Siddhu**

Question No : 3 of 26

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

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

**Made By: Waqar Siddhu**

Question No : 4 of 26

Marks: 1 (Budgeted Time 1 Min)

In TG there may exist \_\_\_\_\_ paths for certain string.

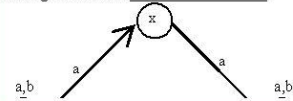
- only one
- only two
- only three
- no

**Made By: Waqar Siddhu**

Question No : 5 of 26

Marks: 1 (Budgeted Time 1 Min)

Below given TG's are \_\_\_\_\_



Answer ( Please select your correct option )

- Equivalent
- Non-equivalent
- Not valid
- There is no way to determine this condition

**Made By: Waqar Siddhu**

Question No : 5 of 26

Marks: 1 (Budgeted Time 1 Min)



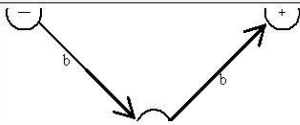
Answer ( Please select your correct option )

- Equivalent
- Non-equivalent
- Not valid
- There is no way to determine this condition

**Made By: Waqar Siddhu**

Question No : 5 of 26

Marks: 1 (Budgeted Time 1 Min)



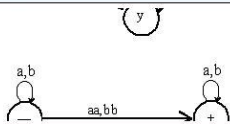
Answer ( Please select your correct option )

- Equivalent
- Non-equivalent
- Not valid
- There is no way to determine this condition

**Made By: Waqar Siddhu**

Question No : 5 of 26

Marks: 1 (Budgeted Time 1 Min)



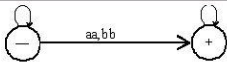
Answer ( Please select your correct option )

- Equivalent
- Non-equivalent
- Not valid
- There is no way to determine this condition

**Made By: Waqar Siddhu**

Question No : 5 of 26

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

- Equivalent
- Non-equivalent
- Not valid
- There is no way to determine this condition

**Made By: Waqar Siddhu**

Question No : 6 of 26

Marks: 1 (Budgeted Time 1 Min)

GTG can have \_\_\_\_\_ final state.

- 0
- 1
- More than 1
- More than 2

**Made By: Waqar Siddhu**

Question No : 7 of 26

Marks: 1 (Budgeted Time 1 Min)

If  $r_1$  and  $r_2$  are regular expressions then  $r_1+r_2$  is a \_\_\_\_\_.

- RE
- FA
- TG
- GTG

**Made By: Waqar Siddhu**

Question No : 8 of 26

Marks: 1 (Budgeted Time 1 Min)

Alphabet  $\Sigma = (a,b,c)$  has number of letters equal to \_\_\_\_\_.

Answer ( Please select your correct option )

One

Two

Three

Four

**Made By: Waqar Siddhu**

Question No : 9 of 26

Marks: 1 (Budgeted Time 1 Min)

If  $r1$  is a regular expression then  $r1^*$  is a \_\_\_\_\_.

Answer ( Please select your correct option )

GTG

NFA

FA

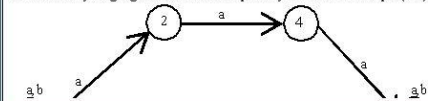
RE

**Made By: Waqar Siddhu**

Question No : 10 of 26

Marks: 1 (Budgeted Time 1 Min)

Show that any language that can be accepted by a Transition Graph (TG) can also be accepted by another TG with an even number of states.



Answer ( Please select your correct option )

bababa

ababab

aaaab

bbaabb

**Made By: Waqar Siddhu**

Question No : 10 of 26

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

bababa

ababab

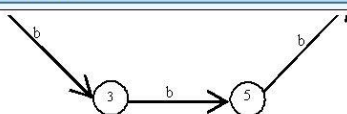
aaaab

bbaabb

**Made By: Waqar Siddhu**

Question No : 10 of 26

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

bababa

ababab

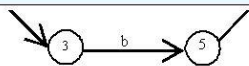
aaaab

bbaabb

**Made By: Waqar Siddhu**

Question No : 10 of 26

Marks: 1 (Budgeted Time 1 Min)



Above given TG accepts the \_\_\_\_\_ string.

Answer ( Please select your correct option )

bababa

ababab

aaaab

bbaabb

**Made By: Waqar Siddhu**

Question No : 11 of 26

Marks: 1 (Budgeted Time 1 Min)

In \_\_\_\_\_ there must be transition for all letters.

Answer ( Please select your correct option )

NFA

FA

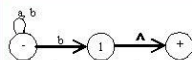
TG

GTG

**Made By: Waqar Siddhu**

Question No : 12 of 26

Marks: 1 (Budgeted Time 1 Min)



Above given structure is a \_\_\_\_\_.

Answer ( Please select your correct option )

FA

NFA

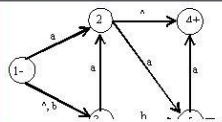
NFA - ^

RE

**Made By: Waqar Siddhu**

Question No : 13 of 26

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

FA

NFA

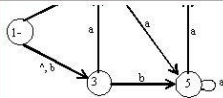
NFA - ^

TG

**Made By: Waqar Siddhu**

Question No : 13 of 26

Marks: 1 (Budgeted Time 1 Min)



Above given structure is a \_\_\_\_\_.

Answer ( Please select your correct option )

FA

NFA

NFA -^

TG

**Made By: Waqar Siddhu**

Question No : 14 of 26

Marks: 1 (Budgeted Time 1 Min)

If we want to make a Moore machine equivalent to Mealy machine then \_\_\_\_\_

Answer ( Please select your correct option )

We should ignore the extra character printed by the Moore machine.

We should ignore the extra character printed by the Mealy machine.

We will make the initial state as a no carry state.

We should not ignore the extra character printed by the Moore machine.

**Made By: Waqar Siddhu**

Question No : 15 of 26

Marks: 1 (Budgeted Time 1 Min)

Choose the correct word produced by the RE (a\*b\*)ab:

aaaa

bbbb

abab

Null

**Made By: Waqar Siddhu**

Question No : 16 of 26

Marks: 1 (Budgeted Time 1 Min)

The \_\_\_\_\_ machine helps in building a machine that can perform the addition of binary numbers.

Answer ( Please select your correct option )

Incrementing

Complementing

Decrementing

Multiplication

**Made By: Waqar Siddhu**



- 1  $r_1^* r_2 r_3^*$
- 2  $(r_1 r_2 r_3)^*$
- 3  $r_1^* r_2^* r_3^*$
- 4 None of the given

**U**

Question No : 17 of 26

Marks: 1 (Budgeted Time 1 Min)



Considering Kleene's theorem, what RE should be in place of X in the 2nd GTG.

Answer ( Please select your correct option )

$r_1^* r_2 r_3^*$

$(r_1 r_2 r_3)^*$

$r_1^* r_2^* r_3^*$

None of the given

**Made By: Waqar Siddhu**

Question No : 18 of 26

Marks: 1 (Budgeted Time 1 Min)

There are \_\_\_\_\_ steps in the recursive definition of languages.

Answer ( Please select your correct option )

1

2

3

4

**Made By: Waqar Siddhu**

Question No : 19 of 26

Marks: 1 (Budgeted Time 1 Min)

Consider the following Regular Expression (RE):  $a(a+b)^*b + b(a+b)a$ .  
All of the following words are accepted except \_\_\_\_\_.

aab

abaab

bab

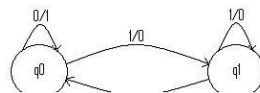
bba

**Made By: Waqar Siddhu**

Question No : 20 of 26

Marks: 1 (Budgeted Time 1 Min)

Consider the following machine:



Answer ( Please select your correct option )

1000110010

1000110010

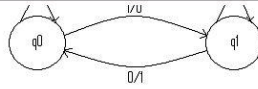
1000111010

0111000110

**Made By: Waqar Siddhu**

Question No : 20 of 26

Marks: 1 (Budgeted Time 1 Min)



Which of the following will be the output for input string "0111000101":

Answer ( Please select your correct option )

C 1000110010

C 1000110010

C 1000111010

C 0111000110

**Made By: Waqar Siddhu**

Question No : 21 of 26

Marks: 2 (Budgeted Time 4 Min)

Read the following statements carefully. If the statement is true write true otherwise write false.

- a) Kleene's star and Kleene's closure are different
- b) Length of output string is one less than that of input string in mealy machine.

Answer ( Please [click here](#) to Add Answer )



**Made By: Waqar Siddhu**

Question No : 22 of 26

Marks: 2 (Budgeted Time 4 Min)

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

Answer ( Please [click here](#) to Add Answer )

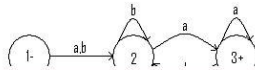


**Made By: Waqar Siddhu**

Question No : 24 of 26

Marks: 3 (Budgeted Time 6 Min)

Take closure of the given Finite Automaton (FA):



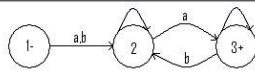
Answer ( Please [click here to Add Answer](#) )

Rich text editor toolbar with options for font style, size, color, and background color. The text area is empty.

**Made By: Waqar Siddhu**

Question No : 24 of 26

Marks: 3 (Budgeted Time 6 Min)



Answer ( Please [click here to Add Answer](#) )

Rich text editor toolbar with options for font style, size, color, and background color. The text area is empty.

**Made By: Waqar Siddhu**

Question No : 25 of 26

Marks: 5 (Budgeted Time 10 Min)

Suppose a Maze of 20 boxes, 1 box for initial and 1 for the final state. There are 5 boxes for non-moveable states while the rest of boxes are used for transitions. Draw a Nondeterministic Finite Automaton (NFA) for the given Maze.

Marks [2.5+2.5]

Answer ( Please [click here to Add Answer](#) )

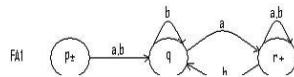
Rich text editor toolbar with options for font style, size, color, and background color. The text area is empty.

**Made By: Waqar Siddhu**

Question No : 26 of 26

Marks: 5 (Budgeted Time 10 Min)

Concatenate the following two FA's:



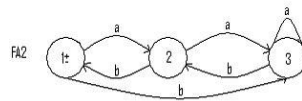
Answer ( Please [click here](#) to Add Answer )

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**Made By: Waqar Siddhu**

Question No : 26 of 26

Marks: 5 (Budgeted Time 10 Min)



Answer ( Please [click here](#) to Add Answer )

Rich text editor toolbar with options for font style, size, color, and background color. The text area is empty.

**Made By: Waqar Siddhu**