

# VIRTUAL UNIVERSITY OF PAKISTAN

A Good Education is a Foundation For a Better Future

CORRECT ANSWER SOLVED BY HADI  
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## (Final Term Past Paper)

MADE AND SOLVED BY TEAM HADI

WARNING: Team HADI is not responsible for any mistake or wrong answer. All students reading and using this document may check and confirm the answers at their own.



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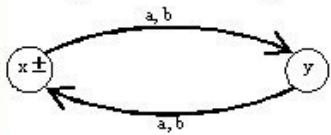
Best of luck!



Question No : 2 of 52

Marks: 1 (Budgeted Time 1 Min)

Below given FA can be represented by



Answer ( Please select your correct option )

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



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

$(a + b)(a + b)$

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

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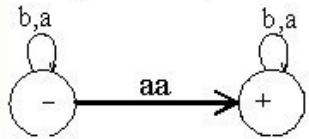
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Question No : 3 of 52

Marks: 1 (Budgeted Time 1 Min)

Below given TG has \_\_\_\_\_ RE.



Answer ( Please select your correct option )

(b+a) (aa) (b+a)\*

(a+b) (aa) (a+b)\*

(a+b)\* (aa) (a+b)\*

(a+b)\* (aa) (a+b)

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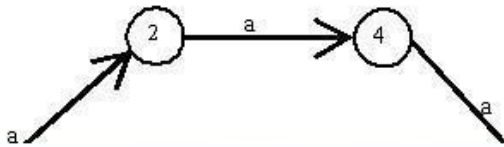
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Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)

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



Answer ( Please select your correct option )

non-symmetric

Equivalent

Non-equivalent

TG's are not valid

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Question No : 5 of 52

Marks: 1 (Budgeted Time 1 Min)

"One GTG can generate \_\_\_\_\_ language".

Answer ( Please select your correct option )

more than one



only one

Concept

only two



only three



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Question No : 6 of 52

Marks: 1 (Budgeted Time 1 Min)

Even-palindrome is a \_\_\_\_\_ language

Answer ( Please select your correct option )

non-regular **Lec:25,page:71**

regular

regular but infinite

regular but finite

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Question No : 7 of 52

Marks: 1 (Budgeted Time 1 Min)

If  $L_1$  and  $L_2$  are two regular languages, then \_\_\_\_\_ is/are also regular.

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Answer ( Please select your correct option )

Both  $L_1 \cup L_2, L_1 \cap L_2$  lec 24, page 65  $L_1 + L_2 = L_1 \cup L_2$  and on page 67

$L_1 \cap L_2$

$L_1 \cup L_2$

$L_1 \cap L_2$

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Question No : 8 of 52

Marks: 1 (Budgeted Time 1 Min)

If the FA has N states, then test the words of length less than N. If any one word is accepted by this FA, then it will accept \_\_\_\_ word.

Answer ( Please select your correct option )

- All **Lec:30,page:85** concept
- No
- One
- Two

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Question No : 9 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following pairs of regular expressions are equivalent?

Answer ( Please select your correct option )

1(001)\* and (10)\*10

x(xxx)\* and (x)\*x

concept

x+ and x\*

x+ and x\*x+

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Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

An alphabet of  $\Sigma$  is valid if

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Answer ( Please select your correct option )

- No letter of  $\Sigma$  appears in middle of any other letter
- No letter of  $\Sigma$  appears at end of any other letter
- No letter of  $\Sigma$  appears at start of any other letter
- No letter of  $\Sigma$  appears at end or middle of any other letter

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Question No : 11 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following pairs of regular expressions are not equivalent?

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Answer ( Please select your correct option )

(ab)\* and a\*b\*

x(xx)\* and (xx)\*x

x\* and x\*x\*

Concept

x(x)\* and (x)\*x

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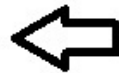
Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)

There exist \_\_\_\_\_ derivations of a certain word in ambiguous grammar.

Answer ( Please select your correct option )

more than one



Exactly one

exactly two

no

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Question No : 13 of 52

Marks: 1 (Budgeted Time 1 Min)

Regular languages are closed under \_\_\_\_\_

Answer ( Please select your correct option )

Union and Concatenation

Concept

Union and Division

Union and Exponent

Union and Factorial

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Which one of the following statements is INCORRECT:

Lec:26,page:73

Answer ( Please select your correct option )

A language consisting of all strings over  $\Sigma=\{a,b\}$  having equal number of a's and b's is a regular language

Every language that can be expressed by FA can also be expressed by RE

None of these

$(a+b)^*aa(a+b)^*$  generates Regular language.

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Question No : 15 of 52

Marks: 1 (Budgeted Time 1 Min)

TM is more powerful than FSM because

Answer ( Please select your correct option )

- The tape movement is confined to one direction
- It has no finite state control
- It has the capability to remember arbitrary long sequences of input symbols
- The tape movement is confined to more than one directions

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CYK algorithm was invented by John Cocke and later was published by \_\_\_\_

lec:44,page:135

Answer ( Please select your correct option )

Talik Khon and Daniel H

Tandao Kasami and Daniel H

Tandao Dagger and Daniel H

Talik Khon



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The process of finding the derivation of word generated by particular grammar is called \_\_\_\_\_

Lec:11,page:136

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Answer ( Please select your correct option )

Processing

Parsing

Programming

Planing



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Question No : 18 of 52

Marks: 1 (Budgeted Time 1 Min)

There are different parsing techniques, including \_\_\_\_\_

Answer ( Please select your correct option )

VuAnswers.com

Top down parsing

Bottom up parsing

Parsing technique for particular grammar of arithmetic expression

All of these



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Question No : 19 of 52

Marks: 1 (Budgeted Time 1 Min)

$\Sigma = \{a, Aa, Abb\}$ , then string  $aAaAbbAa$  has length equal to \_\_\_\_\_.

Answer ( Please select your correct option )

Three

Four  
concept

One

Two

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Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

The language generated by CFG is called \_\_\_\_\_

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Answer ( Please select your correct option )

Infinite

Context Free Language (CFL)



Regular

Finite

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Question No : 21 of 52

Marks: 1 (Budgeted Time 1 Min)

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

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Answer ( Please select your correct option )

NFA

FA



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TG

GTG

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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 incomplete Q..RE of ist is  $r_2 r_3^* r_4$ 

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Question No : 23 of 52

Marks: 1 (Budgeted Time 1 Min)

A regular language \_\_\_\_\_ .

Answer ( Please select your correct option )

Must be finite

Must be infinite

Can be finite or infinite

concept

Complex Language

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Question No : 24 of 52

Marks: 1 (Budgeted Time 1 Min)

If a language can be expressed by a regular expression, then its complement is \_\_\_\_\_.

Lec:24,page:66

Answer ( Please select your correct option )

Regular



Non Regular

Finite

Infinite

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For every Context Free Grammar (CFG), we can make the corresponding \_\_\_\_\_.

Lec:39,page:111

Answer ( Please select your correct option )

FA

TG

PDA

Regular Grammar

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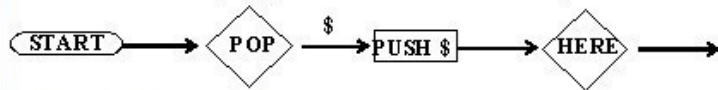
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Look at the following diagram and select the correct option:



Lec:40,page:119

Answer ( Please select your correct option )

- The PDA must not begin with the sequence
- The PDA may begin with the sequence
- The PDA must begin with the sequence
- The PDA may not begin with the sequence



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Consider the following Context Free Grammar (CFG) and select the correct choice

$S \rightarrow AB$

$A \rightarrow BSB \mid a \mid b$

$B \rightarrow CC$

$C \rightarrow SS \mid b \mid bb$

Answer ( Please select your correct option )

abb is a word in the corresponding CFL.

concept

abb is not the word of corresponding CFL.

Any word can be accepted from the corresponding CFL.

b is a word in the corresponding CFL.

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Question No : 28 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following statement(s) is/are true or false?

- 1) The turing machine is similar to a finite automaton but with an unlimited and unrestricted memory.
- 2) A Turing machine is a much more accurate model of a general purpose computer.

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Answer ( Please select your correct option )

- Statement 1 is true      Mentioned in lec 45
- Statement 2 is true      Both are true..check link  
in moazz file
- Both statements (1 & 2) are false
- Statement 2 is false

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Question No : 29 of 52

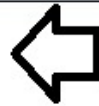
Marks: 1 (Budgeted Time 1 Min)

Language of strings having even number of a's is considered to be:

Lec:3,page:9

Answer ( Please select your correct option )

Regular



Irrelgular

Irregular and infinite

Irregular and finite

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If we have two transition graphs then their union will be expressed by:

Lec:24,page:65

Answer ( Please select your correct option )

taking a common start state and joining them by two null transitions



just connecting both start states by null transitions

connecting final state of first TG to the initial state of second TG

connecting the final state of first TG to the final state of second TG

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A language of strings of prime length is considered to be:

Lec:27,page:75

Answer ( Please select your correct option )

regular but infinite

regular

irregular

regular but finite



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Question No : 32 of 52

Marks: 1 (Budgeted Time 1 Min)

\_\_\_\_\_ and \_\_\_\_\_ are removed in order to make a CFG in Chomsky Normal Form (CNF).

Lec:36,page:102

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Answer ( Please select your correct option )

Null, nullable productions

Nullable, unit productions

Null, unit productions

Strings of length 0, null



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Question No : 33 of 52

Marks: 1 (Budgeted Time 1 Min)

The languages are supposed to be \_\_\_\_\_ in case of testing pumping lemma.

Answer ( Please select your correct option )

context free

irregular

both regular and irregular

regular

mentioned in video lec:27:P can check exm

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Question No : 34 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following refers to an effectively solvable problem having answer in "Yes" or "No"?

Lec:29,page:80

Answer ( Please select your correct option )

Decision procedure



Logical problem

Analytical problem

Binary procedure

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Question No : 35 of 52

Marks: 1 (Budgeted Time 1 Min)

Consider the following Context Free Grammar (CFG):

$S \rightarrow SX|XY$

$X \rightarrow ZZ$

$Y \rightarrow 0$

$Z \rightarrow 1$

Answer ( Please select your correct option )

110



11011

1101111

11101

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Question No : 36 of 52

Marks: 1 (Budgeted Time 1 Min)

Consider the following Context Free Grammar (CFG):

$S \rightarrow SX|XY$

$X \rightarrow ZZ$

$Y \rightarrow 1$

$Z \rightarrow 0$

Answer ( Please select your correct option )

001



00010

0010000

00100

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Question No : 37 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following is a regular Context Free Grammar:

Answer ( Please select your correct option )

$S \rightarrow abS \mid baS \mid \wedge$



$S \rightarrow aSb \mid baS \mid \wedge$

$S \rightarrow abS \mid bSa \mid \wedge$

$S \rightarrow aSb \mid Sa \mid \wedge$

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Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)

Concatenation of r1 and r2 will be shown as:

Lec:13,page:35

Answer ( Please select your correct option )

r1+r2

r2+r1

r2r1

r1r2



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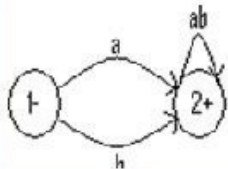
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How many steps are required to convert the given transition graph into a regular expression?



Answer ( Please select your correct option )

1 step



2 steps firstly a & b combine to form a+b and in 2nd step loop of ab combine  $(a+b)ab^*$

3 steps



4 steps



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Question No : 39 of 52

Marks: 1 (Budgeted Time 1 Min)

A nonterminal is said to be self-embedded, if in a given derivation of a word, it ever occurs as a tree \_\_\_\_\_ of itself.

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Answer ( Please select your correct option )

ascendant



descendant



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top



bottom



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Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

\_\_\_\_\_ is always Deterministic.

Answer ( Please select your correct option )

Finite Automaton



Transition Graph

Generalize Transition Graph

Non-deterministic finite automaton

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Question No : 41 of 52

Marks: 2 (Budgeted Time 4 Min)

Write alternative form of this production.

$S \rightarrow aS, S \rightarrow bS, S \rightarrow \Lambda$

Answer ( Please click here to Add Answer )

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$S \rightarrow aS|bS|\Lambda$

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Question No : 42 of 52

Marks: 2 (Budgeted Time 4 Min)

What are the uses of Push Down Automata (PDA) in computing?

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

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**PUSHDOWN STACK** is a place where the input letters can be placed until these letters are referred again.

It can store as many letters as one can in a long column

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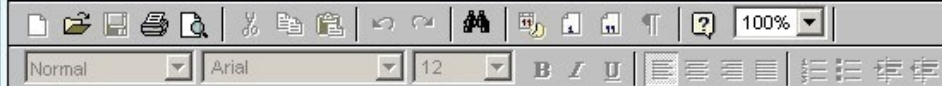
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Question No : 43 of 52

Marks: 2 (Budgeted Time 4 Min)

What is meant by Row language?

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



Lec:41,page:123

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Question No : 44 of 52

Marks: 2 (Budgeted Time 4 Min)

Write down regular expression for a language L of strings defined over  $\Sigma = \{a, b\}$  that neither ends in "a" nor with "b".

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

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RE= $\epsilon$  (null)

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What are the steps of Recursive Definition of Languages?

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

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Lec:3,page:9

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What does the following arbitrary summary table show?

FROM Where	TO Where	READ What	POP What	PUSH What	ROW Number
READ <sub>0</sub>	READ <sub>3</sub>	b	b	abb	11

Answer ( Please click here to Add Answer )



Lec:42,page:124

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Question No : 47 of 52

Marks: 3 (Budgeted Time 6 Min)

Write down Context Free Grammar (CFG) for the language of strings expressed by the following regular expression:

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

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

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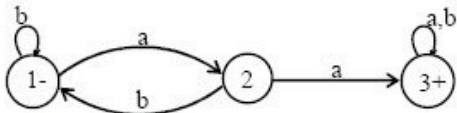
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Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)

Let us consider the following Finite Automaton (FA):



Answer ( Please click here to Add Answer )

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Lec:6,page:16

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Write the CFG for EVEN-EVEN language?

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



Lec:32,page:90

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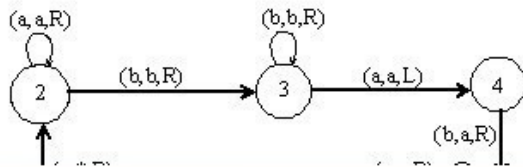
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Consider the following TM



Answer ( Please click here to Add Answer )

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page 142

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Question No : 51 of 52

Marks: 5 (Budgeted Time 10 Min)

Using suitable examples, differentiate between Kleene star closure and plus operation?

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

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Lec:2,page:7

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a. Construct Context Free Grammar (CFG) for the language defined by the regular expression:

$$(ab + ba)^*(a + b)^*$$

b. Remove null productions from the CFG constructed in part i.

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

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