

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the Name of Allāh, the Most Gracious, the Most Merciful

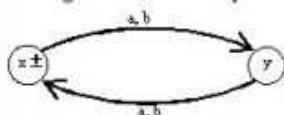
Paper Pattern

MCQS 40 each 1 mark
Short 4 each 2 marks
Short 4 each 3 marks
long 4 each 5 marks

Question No : 2 of 52

Marks: 1 (Budgeted Time 1 Min)

Below given FA can be represented by



Answer (Please select your correct option)

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☒ $((a+b)(a+b))^*$ lec:5 ,page:13

☐ $(a+b)(a+b)^*$

☐ $(a+b)(a+b)$

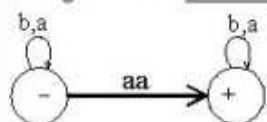
☐ $(a+b)^*(a+b)^*$

Made by: Waqar Siddhu

Question No : 3 of 52

Marks: 1 (Budgeted Time 1 Min)

Below given TG has _____ RE.



Answer (Please select your correct option)

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☐ $(b+a)(aa)(b+a)^*$

☐ $(a+b)(aa)(a+b)^*$

☒ $(a+b)^*(aa)(a+b)^*$ lec:8,page:20

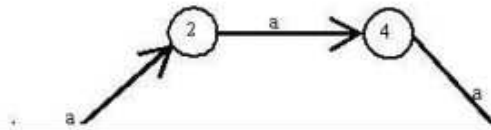
☐ $(a+b)^*(aa)(a+b)$

Made by: Waqar Siddhu

Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)

Below given TG's are _____.



Answer (Please select your correct option)

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☐ non-symmetric

☒ Equivalent

page 21

☐ 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)

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☐ more than one

☒ only one

Concept

☐ only two

☐ only three

Made by: Waqar Siddhu

Question No : 6 of 52

Marks: 1 (Budgeted Time 1 Min)

Even-palindrome is a _____ language

Answer (Please select your correct option)

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☒ non-regular

Lec:25,page:71

☐ regular

☐ regular but infinite

☐ regular but finite

Made by: Waqar Siddhu

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.

Answer (Please select your correct option)

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☒ 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**

☐ $L_1 \cap L_2$

☐ $L_1 \cup L_2$

☐ $L_1 \cap L_2$

Made by: Waqar Siddhu

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)

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☒ All **Lec:30,page:85 concept**

☐ No

☐ One

☐ Two

Made by: Waqar Siddhu

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)

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☐ $1(001)^*$ and $(10)^*10$

☒ $x(\alpha x)^*$ and $(x)^*x$ **concept**

☐ x^+ and x^*

☐ x^+ and x^*x^+

Made by: Waqar Siddhu

Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

An alphabet of Σ is valid if

Answer (Please select your correct option)

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☐ No letter of Σ appears in middle of any other letter

☐ No letter of Σ appears at end of any other letter

☒ No letter of Σ appears at start of any other letter

Lec:1,page:4

☐ No letter of Σ 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?

Answer (Please select your correct option)

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☐ $(ab)^*$ and a^*b^*

☐ $x(xx)^*$ and $(xx)^*x$

☒ x^+ and x^*x^+

Concept

☐ $x(x)^*$ and $(x)^*x$

Made by: Waqar Siddhu

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)

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☒ more than one

☐ Exactly one

☐ exactly two

☐ no

Made by: Waqar Siddhu

Question No : 13 of 52

Marks: 1 (Budgeted Time 1 Min)

Regular languages are closed under _____

Answer (Please select your correct option)

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☒ Union and Concatenation

Concept

☐ Union and Division

☐ Union and Exponent

☐ Union and Factorial

Made by: Waqar Siddhu

Question No : 14 of 52

Marks: 1 (Budgeted Time 1 Min)

Which one of the following statements is INCORRECT:

Answer (Please select your correct option)

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Lec:26,page:73

☒ 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)

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☐ 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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Question No : 16 of 52

Marks: 1 (Budgeted Time 1 Min)

CYK algorithm was invented by John Cocke and later was published by ____

Answer (Please select your correct option)

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☐ Talik Khon and Daniel H

☒ Tandao Kasami and Daniel H

lec:44,page:135

☐ Tandao Dagger and Daniel H

☐ Talik Khon

Made by: Waqar Siddhu

Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer (Please select your correct option)

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☐ Processing

☒ Parsing

Lec:44,page:136

☐ 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)

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☐ Top down parsing

☐ Bottom up parsing

☐ Parsing technique for particular grammar of arithmetic expression

☒ All of these

Lec:44,page:136

Made by: Waqar Siddhu

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)

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☐ Three

☒ Four
concept

☐ One

☐ Two

Made by: Waqar Siddhu

Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

The language generated by CFG is called _____.

Answer (Please select your correct option)

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☐ Infinite

☒ Context Free Language (CFL)
Lec:31,page:88

☐ Regular

☐ Finite

Made by: Waqar Siddhu

Question No : 21 of 52

Marks: 1 (Budgeted Time 1 Min)

In _____ there must be transition for all letters.

Answer (Please select your correct option)

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☐ NFA

☒ FA
Lec:4,page:11

☐ TG

☐ GTG

Made by: Waqar Siddhu

Question No : 22 of 52

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

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☐ $r1^*r2r3^*$

☐ $(r1r2r3)^*$

☐ $r1^*r2^*r3^*$

☒ None of the given incomplete Q..RE of ist is $r2r3^*r4$

Made by: Waqar Siddhu

Question No : 23 of 52

Marks: 1 (Budgeted Time 1 Min)

A regular language _____

Answer (Please select your correct option)

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☐ 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 _____

Answer (Please select your correct option)

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☒ Regular Lec:24,page:66

☐ Non Regular

☐ Finite

☐ Infinite

Made by: Waqar Siddhu

Question No : 25 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer (Please select your correct option)

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FA

☐

TG

☐

PDA

☒

Lec:39,page:111

Regular Grammar

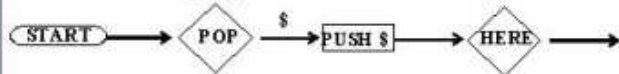
☐

Made by: Waqar Siddhu

Question No : 26 of 52

Marks: 1 (Budgeted Time 1 Min)

Look at the following diagram and select the correct option:



Answer (Please select your correct option)

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The PDA must not begin with the sequence

☐

The PDA may begin with the sequence

☐

The PDA must begin with the sequence

☒

Lec:40,page:119

The PDA may not begin with the sequence

☐

Made by: Waqar Siddhu

Question No : 27 of 52

Marks: 1 (Budgeted Time 1 Min)

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)

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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.

☐

Made by: Waqar Siddhu

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.

Answer (Please select your correct option)

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- ☒ 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

Made by: Waqar Siddhu

Question No : 29 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer (Please select your correct option)

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- ☒ Regular
Lec:3,page:9
- ☐ Irregular
- ☐ Irregular and infinite
- ☐ Irregular and finite

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Question No : 30 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer (Please select your correct option)

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- ☒ taking a common start state and joining them by two null transitions
Lec:24,page:65
- ☐ 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

Made by: Waqar Siddhu

Question No : 31 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer (Please select your correct option)

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☐ regular but infinite

☐ regular

☒ irregular

Lec:27,page:75

☐ regular but finite

Made by: Waqar Siddhu

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).

Answer (Please select your correct option)

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☐ Null, nullable productions

☐ Nullable, unit productions

☒ Null, unit productions

Lec:36,page:102

☐ Strings of length 0, null

Made by: Waqar Siddhu

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)

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☐ context free

☐ irregular

☐ both regular and irregular

☒ regular

mentioned in video lec:27:P can check exm

Made by: Waqar Siddhu

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"?

Answer (Please select your correct option)

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☒ Decision procedure
Lec:29,page:80

☐ Logical problem

☐ Analytical problem

☐ Binary procedure

Made by: Waqar Siddhu

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)

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☒ 110

☐ 11011

☐ 1101111

☐ 11101

Made by: Waqar Siddhu

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)

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☒ 001

☐ 00010

☐ 0010000

☐ 00100

Made by: Waqar Siddhu

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)

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☒ $S \rightarrow abS \mid baS \mid \wedge$ ☐ $S \rightarrow aSb \mid baS \mid \wedge$ ☐ $S \rightarrow abS \mid bSa \mid \wedge$ ☐ $S \rightarrow aSb \mid Sa \mid \wedge$

Made by: Waqar Siddhu

Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)

Concatenation of r1 and r2 will be shown as:

Answer (Please select your correct option)

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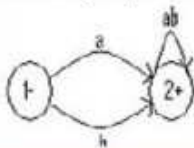
☐ $r1+r2$ ☐ $r2+r1$ ☐ $r2r1$ ☒ $r1r2$ Lec:13,page:35

Made by: Waqar Siddhu

Question No : 19 of 26

Marks: 1 (Budgeted Time 1 Min)

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



Answer (Please select your correct option)

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☐ 1 step☒ 2 steps firstly a & b combine to form a+b and in 2nd step loop of ab combine $\Rightarrow (a+b)ab^*$ ☐ 3 steps☐ 4 steps

Made by: Waqar Siddhu

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.

Answer (Please select your correct option)

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☐ ascendant

☒ descendant

Lec:43,page:127

☐ top

☐ bottom

Made by: Waqar Siddhu

Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

_____ is always Deterministic.

Answer (Please select your correct option)

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☒ Finite Automaton

lec:10,page:25

☐ Transition Graph

☐ Generalize Transition Graph

☐ Non-deterministic finite automaton

Made by: Waqar Siddhu

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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$S \rightarrow aS|bS|\Lambda$

e:90

Made by: Waqar Siddhu

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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Normal Arial 12 B I U

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

Made by: Waqar Siddhu

Question No : 43 of 52

Marks: 2 (Budgeted Time 4 Min)

What is meant by Row language?

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

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Lec:41,page:123

Made by: Waqar Siddhu

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= ϵ (null)

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Question No : 45 of 52

Marks: 3 (Budgeted Time 6 Min)

What are the steps of Recursive Definition of Languages?

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

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Lec:3,page:9

Made by: Waqar Siddhu

Question No : 46 of 52

Marks: 3 (Budgeted Time 6 Min)

What does the following arbitrary summary table show?

FROM Where	TO Where	READ What	POP What	PUSH What	ROW Number
READ ₀	READ ₁	b	b	abb	11

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

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Lec:42,page:124

Made by: Waqar Siddhu

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](#))

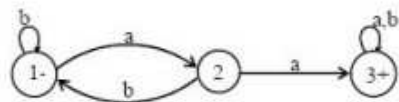
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Question No : 48 of 52

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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Question No : 49 of 52

Marks: 5 (Budgeted Time 10 Min)

Write the CFG for EVEN-EVEN language?

Answer (Please click here to Add Answer)

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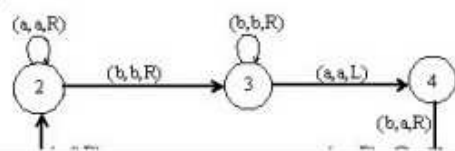
Lec:32,page:90

Made by: Waqar Siddhu

Question No : 50 of 52

Marks: 5 (Budgeted Time 10 Min)

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

Made by: Waqar Siddhu

Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)

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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