FINALTERM EXAMINATION
Spring 2010
CS402- Theory of Automata (Session - 1)

Question No: 1 (Marks: 1) - Please choose one
If r1 = (aa + bb) and r2 = (a + b) then the language (aa + bb)(a + b) will be generated by

- **(r1)(r2) (Page 10)**
- (r1 + r2)
- (r2)(r1)
- (r1)*

Question No: 2 (Marks: 1) - Please choose one
"One language can be expressed by more than one FA". This statement is _____

- **True (Page 14)**
- False
- Some times true & sometimes false
- None of these

Question No: 3 (Marks: 1) - Please choose one
Who did not invent the Turing machine?

- Alan Turing
- **A. M. Turing (Page 140)**
- Turing
- None of these

Question No: 4 (Marks: 1) - Please choose one
Which statement is true?

- **The tape of turing machine is infinite. (Page 140)**
- The tape of turing machine is finite.
- The tape of turing machine is infinite when the language is regular
- The tape of turing machine is finite when the language is nonregular.

Question No: 5 (Marks: 1) - Please choose one

A regular language:

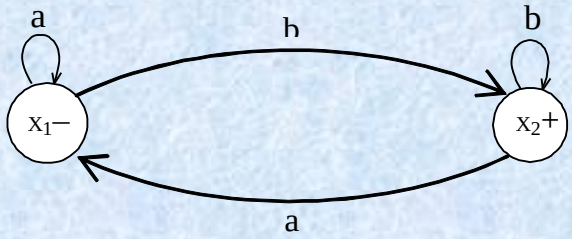
- ► **Must be finite (Page 11)**
- ► Must be infinite
- ► Can be finite or infinite
- ► Must be finite and cannot be infinite

Question No: 6 (Marks: 1) - Please choose one

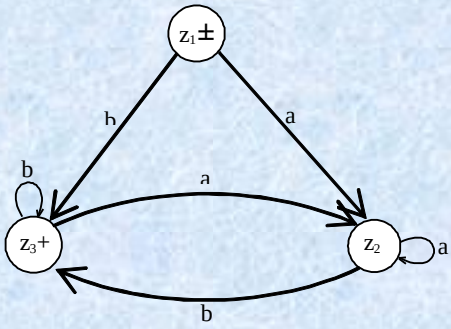
Every regular expression can be expressed as CFG but every CFG cannot be expressed as a regular expression. This statement is:

- ► Depends on the language
- ► None of the given options
- ► **True (Page 97)**
- ► False

Question No: 7 (Marks: 1) - Please choose one



Above given FA corresponds RE r. then FA corresponding to r* will be



This statement is

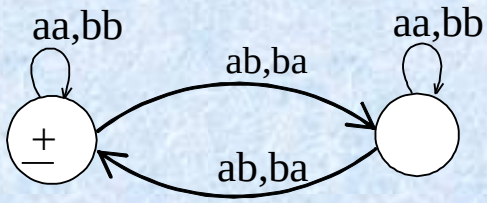
- ► **True (Page 38)**
- ► False
- ► Depends on language
- ► None of these

Question No: 8 (Marks: 1) - Please choose one

Consider the language L of strings, defined over Σ = {a,b}, ending in a

- **There are finite many classes generated by L, so L is regular (Page 76)**
- There are infinite many classes generated by L, so L is regular
- There are finite many classes generated by L, so L is non-regular
- There are infinite many classes generated by L, so L is non-regular

Question No: 9 (Marks: 1) - Please choose one



Above given TG has _____ RE.

- (aa+aa+(ab+ab)(aa+ab)*(ab+ba))*
- **(aa+bb+(ab+ba)(aa+bb)*(ab+ba))* (Page 22)**
- (aa+bb+(ab+ba)(aa+bb)(ab+ba))*
- None of these

Question No: 10 (Marks: 1) - Please choose one

The word 'formal' in formal languages means

- The symbols used have well defined meaning
- They are unnecessary, in reality
- **Only the form of the string of symbols is significant** Click here for detail
- None of these

Question No: 11 (Marks: 1) - Please choose one

Let A = {0, 1}. The number of possible strings of length 'n' that can be formed by the elements of the set A is

- n!
- n^2
- n^m
- **2^n**

Question No: 12 (Marks: 1) - Please choose one

Choose the correct statement.

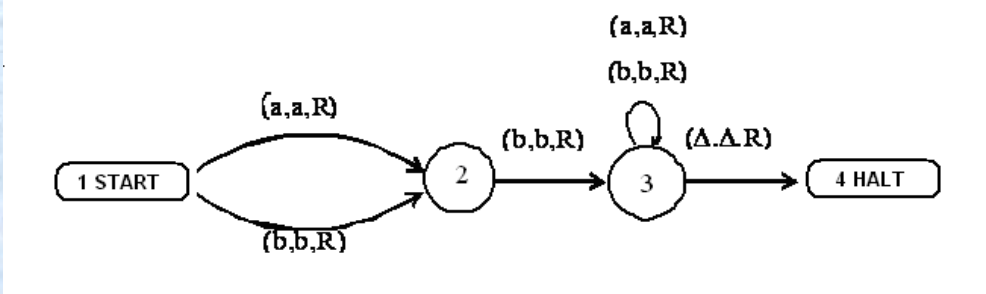
- A Mealy machine generates no language as such
- A Moore machine generates no language as such
- A Mealy machine has no terminal state
- **All of these** click here for detail

Question No: 13 (Marks: 1) - Please choose one
TM is more powerful than FSM because
- ► 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** Click here for detail
- ► None of these

Question No: 14 (Marks: 1) - Please choose one
If L1 and L2 are expressed by regular expressions r1 and r2, respectively then the language expressed by r1 + r2 will be _____
- ► **Regular (Page 10)**
- ► Ir-regular
- ► Can't be decided
- ► Another Language which is not listed here

Question No: 15 (Marks: 1) - Please choose one
Like TG, a PDA can also be non-deterministic
- ► **True (Page 111)**
- ► False

Question No: 16 (Marks: 1) - Please choose one



The above machine is a/anTG _____
- ► Finite Automata
- ► **Turing machine (Page 141)**
- ► FA
- ► TG

Question No: 17 (Marks: 1) - Please choose one
The language of all words (made up of a's and b's) with at least two a's can not be described by the regular expression.
- ► a(a+b)*a(a+b)*(a+b)*ab*
- ► (a+b)* ab* a(a+b)*
- ► b*ab* a(a+b)*
- ► **none of these**

a^nb^n {where n>0} is the language will at least one a and b and cannot be described by RE.

Question No: 18 (Marks: 1) - Please choose one
In FA, if one enters in a specific state but there is no way to leave it, then that specific state is called
- ► Dead State
- ► Waste Basket
- ► Davey John Locker
- ► **All of these (Page 17)**

Question No: 19 (Marks: 1) - Please choose one
If L is a regular language then, L^c is also a _____ language.
- ► **Regular (Page 66)**
- ► Non-regular
- ► Regular but finite
- ► None of the given

Question No: 20 (Marks: 1) - Please choose one
In CFG, the symbols that can't be replaced by anything are called___
- ► **Terminal (Page 87)**
- ► Non-Terminal
- ► Production
- ► All of given

Question No: 21 (Marks: 1) - Please choose one
Which of the following is NOT a regular language?
- ► String of 0's whose length is a perfect squere
- ► Set of all palindromes made up of 0's and 1's
- ► String of 0's whose length is a prime number
- ► **All of the given options** Click here for detail

Question No: 22 (Marks: 1) - Please choose one
Choose the incorrect (FALSE) statement.
- ► A Mealy machine generates no language as such
- ► A Mealy machine has no terminal state
- ► **For a given input string, length of the output string generated by a Moore machine is not more than the length of the output string generated by that of a Mealy machine** click here for detail
- ► All of these

Question No: 23 (Marks: 1) - Please choose one
Pumping lemma is generally used to prove that:
- ► A given language is infinite
- ► **A given language is not regular** Click here for detail
- ► Whether two given regular expressions of a regular language are equivalent or not
- ► None of these

Question No: 24 (Marks: 1) - Please choose one
Which of the following is a regular language?
- ► **String of odd number of zeroes** Click here for detail
- ► Set of all palindromes made up of 0's and 1's
- ► String of 0's whose length is a prime number
- ► All of these

Question No: 25 (Marks: 1) - Please choose one
Choose the incorrect statement:
- ► (a+b)*aa(a+b)* generates Regular language.
- ► **A language consisting of all strings over ∑={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

Question No: 26 (Marks: 1) - Please choose one
Left hand side of a production in CFG consists of:
- ► One terminal
- ► More than one terminal
- ► **One non-terminal (Page 87)**
- ► Terminals and non-terminals

FINALTERM EXAMINATION
SPRING 2007

Question No: 1 (Marks: 1) - Please choose one
PDA is only used to represent a regular language.
- ► True
- ► **False** Click here for detail

Question No: 2 (Marks: 1) - Please choose one
If L is a regular language then LC is also a regular language.
- ► **True (Page 66)**
- ► False

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Question No: 3 (Marks: 1) - Please choose one
A production of the form non-terminal ⇾ string of two non-terminal is called a live Production.
► **True (Page 127)**
► False

Question No: 4 (Marks: 1) - Please choose one
We can find a CFG corresponding to a DFA.
► **True (Page 97)**
► False

Question No: 5 (Marks: 1) - Please choose one
START, READ, HERE and ACCEPTS are conversions of the machine
► **True (Page 122)**
► False

Question No: 6 (Marks: 1) - Please choose one
A CFG is said to be ambiguous if there exists at least one word of its language that can be generated by different production trees
► **True (Page 95)**
► False

Question No: 7 (Marks: 1) - Please choose one
Syntax tree or Generation tree or Derivation tree are same tree
► **True (Page 92)**
► False

Question No: 8 (Marks: 1) - Please choose one
The symbols that cannot be replaced by anything are called terminals
► **True (Page 87)**
► False

Question No: 9 (Marks: 1) - Please choose one
The production of the form non-terminal ⇾ one non-terminal is called unit production
► **True (Page 100)**
► False

Question No: 10 (Marks: 1) - Please choose one
DFA and PDA are equal in power.
► True
► **False (Page 105)**

FINALTERM EXAMINATION
Spring 2006
CS402- Theory of Automata

Question No. 1
A production of the form non-terminal ⇗ non-terminal is called a dead Production.
True
False (Page 127)

Question No. 2
Semi-word is a string having some terminals and one non-terminal at the right of string.
True (Page 97)
False

Question No. 3
Two FAs are equivalent if they have same no. of states.
True (Page 15)
False

Question No. 4
There exist exactly two different derivations in an ambiguous CFG for a word.
True (Page 93)
False

Question No. 6
Regular languages are closed under Union, Concatenation and Kleene star.
True (Page 10)
False

Question No. 7
CFG may also represent a regular language.
True (Page 97)
False

Question No. 9 Marks : 1
PDA is stronger than FA.
True (Page 105)
False

FINALTERM EXAMINATION
Spring 2005
CS402- Theory of Automata

Question No. 1
A Total Language Tree has
All languages over Σ
All strings over Σ (Page 96)
All words of all languages over Σ
All words of one language over Σ

Question No. 2
What Turing Machine does not have?
Stack
Tape
Head
Word
Turing machine has stack but insertion and deletion can be done from both sides. Tape and head to.

Question No. 3
CFG given S → bS|Sb|aa represents language
b*aa
aab*
b*aab*
b*(aa)*b*

Question No. 4
A Language that is finite but not regular
Λ
(a+b)*
Φ (not sure)
All strings of a's in Σ = {a,.b}

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CS402 – Quiz No.3

Question # 1 of 10 (Total Marks: 1) **Select correct option:**
The values of input (say a & b) does not remain same in one cycle due to
NAND gate
Click plus
OR gate
NOT gate

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
Set of all palindromes over {a,b}is regular

True
False **(Page 74)**

Question # 3 of 10 (Total Marks: 1) **Select correct option:**
In CFG, the symbols that cannot be replaced by anything are called

Terminals **(Page 87)**
Non terminals
Productions
None of the given options

Question # 4 of 10 (Total Marks: 1) **Select correct option:**
a^n b^n generates the …… language

regular
non regular
EQUAL and non regular **(Page 71)**
EQUAL and regular

Question # 5 of 10 (Total Marks: 1) **Select correct option:**
The grammatical rules which involves meaning of words are called:

Semantic **(Page 87)**
Sytactics
Alphabets
None of he given options

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Question # 6 of 10 (Total Marks: 1) **Select correct option:**
The reverse of the string sbfsbb over { sb, f, b }

bbsfbs
bsbfsb
sbbfsb
bsfbsb

Question # 7 of 10 (Total Marks: 1) **Select correct option:**
If an FA has N state then it must accept the word of length

N-1
N+1
N+2N

Question # 8 of 10 (Total Marks: 1) **Select correct option:**
Two languages are said to belong to same class if they end in the same state when they run over an FA, that state

Must be final state
May be final state or not (Page 75)
May be start or not
None of the given options

Question # 9 of 10 (Total Marks: 1) **Select correct option:**
In pref(Q in R) Q is …… to (than) R

Equal
Not Equal (Page 79)
Greater
Smaller

Question # 10 of 10 (Total Marks: 1) **Select correct option:**
According to Myhill Nerode theorem, if L generates finite no. of classes then L is.....

Finite
Infinite
Regular (Page 76)
Non Regular

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Question # 1 of 10 (Total Marks: 1) **Select correct option:**
If the intersection of two regular languages is regular then the complement of the intersection of these two languages is also regular

True (Page 68)
False

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
In pumping lemma theorem (x y^n z) the range of n is

n=1,2,3,4..... (Page 74)
n=0,1,2,3,4....
n=-3,-2,-1,0,1,2,3,4.....
n=-3,-2,-1,1,2,3,4.....

Question # 3 of 10 (Total Marks: 1) **Select correct option:**
The complement of a regular language is also a regular

True rep
False

CS402 – Quiz No.3

Question # 1 of 10 (Total Marks: 1) **Select correct option:**
For a non regular language there exist …… FA

One
At least one
At most one
No (Page 71)

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
The strings or words which do not belong to a language is called…… of that language

Intersection
Union
Complement (Page 66)
Quotient

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Question # 3 of 10 (Total Marks: 1) **Select correct option:**
A non regular language can be represented by
RE
FA
TG
None of the given options (Page 71)

Question # 4 of 10 (Total Marks: 1) **Select correct option:**
For language L defined over {a, b},then L partitions {a, b}* into …… classes

Infinite
Finite
Distinct (Page 75)
Non distinct

Question # 5 of 10 (Total Marks: 1) **Select correct option:**
If an FA accept a word then there must exist a path from

Initial to final state (Page 81)
Initial to each state
Initial to each state but not to final state
Initial to final state by traversing each state

Question # 6 of 10 (Total Marks: 1) **Select correct option:**
Does the empty string match the regular expression |y+a|?

Yes
No (Page 3)

Question # 7 of 10 (Total Marks: 1) **Select correct option:**
If an FA already accepts the language expressed by the closure of certain RE, then the given FA is the required FA.

True (Page 37)
False

Question # 8 of 10 (Total Marks: 1) **Select correct option:**
Which of the following statement is true about NFA with Null String?

Infinite states
Infinite set of letters
Infinite set of transitions
Transition of null string is allowed at any stage (Page 71)

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Question # 9 of 10 (Total Marks: 1) **Select correct option:**
If R is a regular language and L is some language, and L U R is a regular language, then L must be a regular language.

True (page 10)
False

Question # 10 of 10 (Total Marks: 1) **Select correct option:**
FA corresponding to an NFA can be built by introducing an empty state for a letter having

no transition at certain state (Page 43)
one transition at certain state
two transition at certain state
more than two transitions at certain state

Question # 1 of 10 (Total Marks: 1) **Select correct option:**
Let FA3 be an FA corresponding to FA1FA2, then the initial state of FA3 must correspond to the initial state of

FA1 only (Page 35)
FA2 only
FA1 or FA2
FA1 and FA2

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
(a* + b*)* = (a + b)* this expression is _____
True
False

Question # 3 of 10 (Total Marks: 1) **Select correct option:**
If S = { x }, then S* will be
{x,xx,xxx,xxxx,…}
{^ ,x,xx,xxx,xxxx,…} (Page 10)

Question # 4 of 10 (Total Marks: 1) **Select correct option:**
The states in which there is no way to leave after entry are called
Davey John Lockers
Dead States
Waste Baskets
All of the given options (Page 17)

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Question # 5 of 10 (Total Marks: 1) **Select correct option:**
If S = {ab, bb}, then S* will not contain
Abbbab
Bbba
ababbb
bbbbab

Question # 6 of 10 (Total Marks: 1) **Select correct option:**
According to theory of automata there are _____ types of languages

1
2 (Page 3)
3
4

Question # 7 of 10 (Total Marks: 1) **Select correct option:**
What do automata mean?
Something done manually
Something done automatically (Page 3)

Question # 8 of 10 (Total Marks: 1) **Select correct option:**
What is false about the term alphabet?
It is a finite set of symbols.
It is usually denoted by Greek letter sigma
It can be an empty set. (Page 3)
Strings are made up of its elements

Question # 9 of 10 (Total Marks: 1) **Select correct option:**
Formal is also known as _____
Syntactic language (page 3)
Semantic language
Informal language
Nsone of these

Question # 10 of 10 (Total Marks: 1) **Select correct option:**
Following are types of languages

Formal Languages (Syntactic languages)
Informal Languages (Semantic languages)
Both (Page 3)
None of above

CS402 – Quiz No.4

Question # 1 of 10 (Total Marks: 1) **Select correct option:**
Consider the following production (of a CFG): S->XYZ Here _____ is left most nonterminal in working string. Note: S, X, Y and Z are all nonterminals
S
X
Y
Z

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
A PDA is called nondeterministic PDA if _____

There are more than one outgoing edges at READ or POP states with one label (Page 111)
There are more than one PUSH states
There are mroe than one POP states
All of the given options

Question # 3 of 10 (Total Marks: 1) **Select correct option:**
A PDA consists of the following:

An alphabet (Sigma) of input letters.
An input TAPE with infinite many locations in one direction
One START state with only one out-edge and no in-edge
All of the given options (Page 105)

Question # 4 of 10 (Total Marks: 1) **Select correct option:**
The CFG S --> aSa | bSb | a | b | ^ represents the language

EVEN-EVEN
PALINDROM (Page 91)
EQUAL
ODD-ODD

Question # 5 of 10 (Total Marks: 1) **Select correct option:**
Halt states are

Start and Accept
Accept and Reject (Page 105)
Start and Reject
Read and Reject

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Question # 6 of 10 (Total Marks: 1) **Select correct option:**
Choice of path can be determined by left most derivation of the string belonging to CFL at…… state

Accept (Page 104)
Reject
Push
POP

Question # 7 of 10 (Total Marks: 1) **Select correct option:**
The unit and null productions can be deleted from a CFG

True (Page 99-100)
False

Question # 8 of 10 (Total Marks: 1) **Select correct option:**
Identify the TRUE statement about following CFG:
S -> SB|AB
A -> CC
B -> b
C -> a

The given CFG has 8 Nonterminals
The given CFG has 8 Terminals
The given CFG is in CNF (Page 101)
The given CFG is not in CNF

Question # 9 of 10 (Total Marks: 1) **Select correct option:**
The structure given below is called _____ S -> aA|bB A -> aS|a B -> bS|b

RE
TG
CFG (Page 87)
PDA

Question # 10 of 10 (Total Marks: 1) **Select correct option:**
Which of the following states is not part of PDA

START
ACCEPT
WRITE (Page 107)
REJECT

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CS402 – Quiz No.4

Question # 1 of 10 (Total Marks: 1) **Select correct option:**
The production of the form: nonterminal --> one nonterminal is called the _____

Unit production (Page 100)
NULL production
Terminal production
Non Terminal production

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
A _____ is the one for which every input string has a unique path through the machine.

Deterministic PDA (Page 111)
nondeterministic PDA
PUSHDOWN store
Input Tape

Question # 3 of 10 (Total Marks: 1) **Select correct option:**
In the null production N --> ^ , N is a

Terminal
Non terminal (Page 99)
Word
None of the given options

Question # 4 of 10 (Total Marks: 1) **Select correct option:**
The major problem in the earliest computers was

To store the contents in the registers
To display mathematical formulae (Page 87)
To load the contents from the registers
To calculate the mathematical formula

Question # 5 of 10 (Total Marks: 1) **Select correct option:**
In polish notation, (o-o-o) is the abbreviation of……?

Operand - Operator – Operand
Operand - Operand- Operator
Operator -Operand – Operand (Page 94)
Operand -Operand – Operand

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Question # 6 of 10 (Total Marks: 1) **Select correct option:**
The CFG is said to be ambiguous if there exist at least one word of its language that can be generated by the …… production trees

One
Two
More than one (Page 95)
At most one

Question # 7 of 10 (Total Marks: 1) **Select correct option:**
The input string is placed, before it runs, in

Stack
Memory
Tape (Page 105)
Ram

Question # 8 of 10 (Total Marks: 1) **Select correct option:**
The production S --> SS | a | b | ^ can be expressed by RE

(a+b)+
(a+b)
(a+b)* (Page 88)
(ab)*

Question # 9 of 10 (Total Marks: 1) **Select correct option:**
The locations into which we put the input letters on "Input Tap" are called _____

words
alphabets
cells (Page 105)
elements

Question # 10 of 10 (Total Marks: 1) **Select correct option:**
"CFG" stands for _____

Context Free Graph
Context Free Grammer (Page 87)
Context Finite Graph
Context Finite Grammer

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Question # 1 of 10 (Total Marks: 1) **Select correct option:**
In a CFG the nonterminal that occurs first from the left in the working string, is said to be _____

Least Significant nonterminal
Most Significant nonterminal
Left most nonterminal (Page 103)
Left most derivate

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
The unit production is

Terminal --> Terminal
Terminal --> Non Terminal
Non terminal --> Terminal
Non terminal --> Non Terminal (Page 100)

Question # 3 of 10 (Total Marks: 1) **Select correct option:**
A _____ operator adds a new letter at the top of STACK

PUSH (Page 107)
POP
READ
APPEND

Question # 4 of 10 (Total Marks: 1) **Select correct option:**
PDA stands for _____

Push and Drop Automaton
Pop and Drop Automaton
Push Down Automaton (Page 112)
None of given options

Question # 5 of 10 (Total Marks: 1) **Select correct option:**
The production of the form: Nonterminal-> ^ is said to be _____ production

NULL (Page 99)
UNIT
Chomsky form production
None of the given options

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Question # 6 of 10 (Total Marks: 1) **Select correct option:**
If a CFG has a null production, then it is _____

Posiible to construct another CFG without null production accepting the same language with the exception of the word ^ (Page 99)
Not possible to construct another CFG without null production accepting the same language with the exception of the word ^
Called NULL CFG
Called Chmosky Normal Form (CNF)

Question # 7 of 10 (Total Marks: 1) **Select correct option:**
In a STACK:

The element PUSHed first is POPed first
The element PUSHed first is POPed in the last (Page 107 concept)
The element PUSHed in last is POPed in last
None of given options

Question # 8 of 10 (Total Marks: 1) **Select correct option:**
Kleene star closure can be defined
Over any set of string (Page 7)
Over specific type of string

Question # 9 of 10 (Total Marks: 1) **Select correct option:**
While finding RE corresponding to TG, we connect the new start state to the old start state by the transition labeled by
A
B
null string (Page 26)
None of the given options

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Some More Quizzes

Question # 1 of 10 (Total Marks: 1) **Select correct option:**
For a given input, it provides the compliment of Boolean AND output.

NAND box (NOT AND) **(Page 63)**
DELAY box
OR box
AND box

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
It delays the transmission of signal along the wire by one step (clock pulse).

NAND box (NOT AND)
DELAY box **(Page 63)**
OR box
AND box

Question # 3 of 10 (Total Marks: 1) **Select correct option:**
For the given input, it provides the Boolean OR output

NAND box (NOT AND)
DELAY box
OR box **(Page 63)**
AND box

Question # 4 of 10 (Total Marks: 1) **Select correct option:**
For the given input, AND box provides the Boolean AND output.
True **(Page 63)**
False

Question # 5 of 10 (Total Marks: 1) **Select correct option:**
The current in the wire is indicated by 1 and 0 indicates the absence of the current.
True **(Page 63)**
False

Question # 6 of 10 (Total Marks: 1) **Select correct option:**
Any language that can not be expressed by a RE is said to be regular language.
True
False **(Page 71)**

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Question # 7 of 10 (Total Marks: 1) **Select correct option:**
If L1 and L2 are regular languages_____ is/are also regular language(s).

L1 + L2
L1L2
L1*
All of above (Page 10)

Question # 8 of 10 (Total Marks: 1) **Select correct option:**
Let L be a language defined over an alphabet Σ, then the language of strings, defined over Σ, not belonging to L, is called Complement of the language L, denoted by Lc or L'.
True (Page 66)
False

Question # 9 of 10 (Total Marks: 1) **Select correct option:**
To describe the complement of a language, it is very important to describe the ---------- of that language over which the language is defined.

Alphabet (Page 66)
Regular Expression
String
Word

Question # 10 of 10 (Total Marks: 1) **Select correct option:**
For a certain language L, the complement of Lc is the given language L *i.e.* (Lc)c = Lc
True
False (Page 66)

Question # 1 of 10 (Total Marks: 1) **Select correct option:**
If L is a regular language then, --------- is also a regular language.
Lm
Ls
Lx
Lc (Page 66)

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
Converting each of the final states of F to non-final states and old non-final states of F to final states, FA thus obtained will reject every string belonging to L and will accept every string, defined over Σ, not belonging to L. is called
Transition Graph of L
Regular expression of L
Complement of L (Page 66)
Finite Automata of L

Question # 3 of 10 (Total Marks: 1) **Select correct option:**
If L1 and L2 are two regular languages, then L1 U L2 is not a regular.
True
False (Page 65)

Question # 4 of 10 (Total Marks: 1) **Select correct option:**
De-Morgan's law for sets is expressed by,
$(L_1^c \cap L_2^c)^c = L_1^c \cap L_2^c$
$(L_1^c \cap L_2^c)^c = L_1^c \cap L_2^c$
$(L_1^c \cap L_2^c)^c = L_1 \cap L_2$
$(L_1^c \cap L_2^c)^c = L_1 \cup L_2$ **CORRECT (page 68)**

Question # 5 of 10 (Total Marks: 1) **Select correct option:**
If L1 and L2 are regular languages, then these can be expressed by the corresponding FAs.
True (Page 68)
False

Question # 6 of 10 (Total Marks: 1) **Select correct option:**
L= language of words containing even number of a's. Regular Expression is

(a+b)*aa(a+b)*
(b+ab*a)* (Page 68)
a+bb*aab*a
(a+b)*ab(a+b)*

Question # 7 of 10 (Total Marks: 1) **Select correct option:**
The regular expression defining the language $L_1 \cap L_2$ can be obtained, converting and reducing the previous ---------- into a ---------- as after eliminating states.

GTG, TG
FA, GTG (Page 69)
FA, TG
TG, RE

Question # 8 of 10 (Total Marks: 1) **Select correct option:**
The language that can be expressed by any regular expression is called a Non regular language.
True
False (Page 71)

Question # 9 of 10 (Total Marks: 1) **Select correct option:**
The languages ---------- are the examples of non regular languages.

PALINDROME and PRIME (Page 71)
PALINDROME and EVEN-EVEN
EVEN-EVEN and PRIME
FACTORIAL and SQURE

Question # 10 of 10 (Total Marks: 1) **Select correct option:**
Let L be any infinite regular language, defined over an alphabet Σ then there exist three strings x, y and z belonging to Σ* such that all the strings of the form xy^nz for n=1,2,3, … are the words in L. called.

Complement of L
Pumping Lemma (Page 72)
Kleene's theorem
None in given

Question # 1 of 10 (Total Marks: 1) **Select correct option:**
Languages are proved to be regular or non regular using pumping lemma.
True (Page 74)
False

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
---------- is obviously infinite language.
EQUAL-EQUAL
EVEN-EVEN
PALINDROME (Page 75)
FACTORIAL

Question # 3 of 10 (Total Marks: 1) **Select correct option:**
If, two strings x and y, defined over Σ, are run over an FA accepting the language L, then x and y are said to belong to the same class if they end in the same state, no matter that state is final or not.
True (Page 75)
False

Question # 4 of 10 (Total Marks: 1) **Select correct option:**
Myhill Nerode theorem is consisting of the followings,

L partitions Σ* into distinct classes.
If L is regular then, L generates finite number of classes.
If L generates finite number of classes then L is regular.
All of above (Page 75)

Question # 5 of 10 (Total Marks: 1) **Select correct option:**
The language Q is said to be quotient of two regular languages P and R, denoted by--- if PQ=R.
R=Q/P
Q=R/P (Page 78)
Q=P/R
P=R/Q

Question # 6 of 10 (Total Marks: 1) **Select correct option:**
If two languages R and Q are given, then the prefixes of Q in R denoted by Pref(Q in R).
True (Page 78)
False

Question # 7 of 10 (Total Marks: 1) **Select correct option:**
Let Q = {aa, abaaabb, bbaaaaa, bbbbbbbbbb} and R = {b, bbbb, bbbaaa, bbbaaaaa} Pref (Q in R) is equal to,

{b,bbba,bbbaaa} (Page 78)
{b,bba,bbaaa}
{ab,bba,bbbaa}
{b,bba,bbba}

Question # 8 of 10 (Total Marks: 1) **Select correct option:**
If R is regular language and Q is any language (regular/ non regular), then Pref (Q in R) is ---------.

Non-regular
Equal
Regular (Page 79)
Infinite

Question # 9 of 10 (Total Marks: 1) **Select correct option:**
_____ states are called the halt states.
ACCEPT and REJECT (Page 105)
ACCEPT and READ
ACCEPT AND START
ACCEPT AND WRITE

Question # 10 of 10 (Total Marks: 1) **Select correct option:**
The part of an FA, where the input string is placed before it is run, is called _____

State
Transition
Input Tape (Page 105)
Output Tape

Question # 1 of 10 (Total Marks: 1) **Select correct option:**
In new format of an FA (discussed in lecture 37), This state is like dead-end non final state

ACCEPT
REJECT (Page 105)
STATR
READ

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
Between the two consecutive joints on a path

One character can be pushed and one character can be popped
Any no. of characters can be pushed and one character can be popped (Page 122)
One character can be pushed and any no. of characters can be popped
Any no. of characters can be pushed and any no. of characters can be popped

Question # 3 of 10 (Total Marks: 1) **Select correct option:**
The PDA is called non-deterministic PDA when there are more than one out going edges from…… state

START or READ
POP or REJECT
READ or POP (Page 111)
PUSH or POP

Question # 4 of 10 (Total Marks: 1) **Select correct option:**
Identify the TRUE statement:
A PDA is non-deterministic, if there are more than one READ states in PDA
A PDA is never non-deterministic
Like TG, A PDA can also be non-deterministic (Page 111)
A PDA is non-deterministic, if there are more than one REJECT states in PDA

Question # 5 of 10 (Total Marks: 1) **Select correct option:**
There is a problem in deciding whether a state of FA should be marked or not when the language Q is infinite.
True (Page 79)
False

Question # 6 of 10 (Total Marks: 1) **Select correct option:**
If an effectively solvable problem has answered in yes or no, then this solution is called ---------

Decision procedure (Page 80)
Decision method
Decision problem
Decision making

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Question # 7 of 10 (Total Marks: 1) **Select correct option:**
The following problem(s) ---------- is/are called decidable problem(s).

The two regular expressions define the same language
The two FAs are equivalent
Both a and b (Page 80)
None of given

Question # 8 of 10 (Total Marks: 1) **Select correct option:**
To examine whether a certain FA accepts any words, it is required to seek the paths from ------- state.

Final to initial
Final to final
Initial to final (Page 81)
Initial to initial

Question # 9 of 10 (Total Marks: 1) **Select correct option:**
The high level language is converted into assembly language codes by a program called compiler.

TRUE (Page 87)
FALSE

Question # 10 of 10 (Total Marks: 1) **Select correct option:**
Grammatical rules which involve the meaning of words are called ----------
Semantics (Page 87)
Syntactic
Both a and b
None of given

Question # 1 of 10 (Total Marks: 1) **Select correct option:**
Grammatical rules which do not involve the meaning of words are called ----------
Semantics
Syntactic (Page 87)
Both a and b
None of given

Question # 2 of 10 (Total Marks: 1) **Select correct option:**
The symbols that must be replaced by other things are called _____

Productions
Terminals
Non-terminals (Page 87)
None of given

Question # 3 of 10 (Total Marks: 1) **Select correct option:**
The grammatical rules are often called_____

Productions (Page 87)
Terminals
Non-terminals
None of given

Question # 4 of 10 (Total Marks: 1) **Select correct option:**
The terminals are designated by _____ letters, while the non-terminals are designated by _____ letters.
Capital, bold
Small, capital (Page 87)
Capital, small
Small, bold

Question # 5 of 10 (Total Marks: 1) **Select correct option:**
The language generated by _____ is called Context Free Language (CFL).
FA
TG
CFG (Page 87)
TGT

Question # 6 of 10 (Total Marks: 1) **Select correct option:**
Σ = {a,b} Productions S→XaaX
X→aX
X→bX
X→Λ
This grammar defines the language expressed by_____

(a+b)*aa(a+b)* (Page 89)
(a+b)*a(a+b)*a
(a+b)*aa(a+b)*aa
(a+b)*aba+b)*

Question # 7 of 10 (Total Marks: 1) **Select correct option:**
S → aXb|b
XaX → aX|bX|Λ
The given CFG generates the language in English _____

Beginning and ending in different letters (Page 91)
Beginning and ending in same letter
Having even-even language
None of given

Question # 8 of 10 (Total Marks: 1) **Select correct option:**

The CFG is not said to be ambiguous if there exists atleast one word of its language that can be generated by the different production trees,

TRUE
FALSE (Page 95)

Question # 9 of 10 (Total Marks: 1) **Select correct option:**

The language generated by that CFG is regular if _____

No terminal → semi word
No terminal → word
Both a and b (Page 97)
None of given

Question # 10 of 10 (Total Marks: 1) **Select correct option:**

The production of the form no terminal → Λ is said to be null production.

TRUE (Page 99)
FALSE

Question # 1 of 10 (Total Marks: 1) **Select correct option:**

CNF is stands for

Context Normal Form
Complete Normal Form
Chomsky Normal Form (Page 102)
Compared Null Form

Question # 2 of 10 (Total Marks: 1) **Select correct option:**

Proof(Kleene's Theorem Part II)
If a TG has more than one start states, then

Introduce the new start state (Page 26)
Eliminate the old start state
Replace the old start state with final state
Replace the old final state with new start state

Question # 3 of 10 (Total Marks: 1) **Select correct option:**

Which of the following regular expression represents same language?
a. (a+ab)*
b. (ba+a)*
c. a*(aa*b)*

d. (a*b*)* (a+b)*a(a+b)*b(a+b)*+ (a+b)*b(a+b)*a(a+b)*.

{ x}*, { x}+, {a+b}*

Select correct option:
a and b (correct)
a and c
c and d

Question # 4 of 10 (Total Marks: 1) Select correct option:
Let FA3 be an FA corresponding to FA1+FA2, then the initial state of FA3 must correspond to the initial state of

FA1 only
FA2 only
FA1 or FA2 (Page 32)
FA1 and FA2

Question # 5 of 10 (Total Marks: 1) Select correct option:
Which of the following statement is NOT true about TG?

There exists exactly one path for certain string (Page 19)
There may exist more than one paths for certain string
There may exist no path for certain string
There may be no final state

Question # 6 of 10 (Total Marks: 1) Select correct option:
Kleene's theorem states

All representations of a regular language are equivalent.
All representations of a context free language are equivalent.
All representations of a recursive language are equivalent
Finite Automata are less powerful than Pushdown Automata. (Page 105)

Question # 7 of 10 (Total Marks: 1) Select correct option:
A language accepted by an FA is also accepted by

TG only
GTG only
RE only
All of the given (Page 25)