1:
Number of states of the FSM required to simulate behaviour of a computer with a memory capable of storing "m" words, each of length 'n'

A. m x 2^n

B. 2^{mn}

C. 2^{m+n}

D. all of these

Answer Report Discuss
Option: B

Explanation :

For every data here length is ‘n’ and memory's states are defined in terms of power of 2,
Here the total memory capability for all the words = mn
Hence number of states are 2^{mn}

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2:
An FSM with

A. 1 stack is more powerful than an FSM with no stack
B. 2 stacks is more powerful than a FSM with 1 stack
C. both (a) and (b)
D. None of these

Answer Report Discuss
Option: C

Explanation :

Click on Discuss to view users comments.

3:
If two finite states machine M and N are isomorphic, then

A. M can be transformed to N, merely re-labelling its states
B. M can be transformed to N, merely re-labelling its edges
C. Both (a) and (b)
D. None of these

Answer Report Discuss
Option: A

Explanation :

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4:
Power of

A. DFSM and NDFSM are same

B. DFSM and NDFSM are different
C. DPDM and NDPDM are diferent
D. Both (A) and (C)

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

5:
Which of the folowing pairs of regular expressions are equivalent ?

A. 1 (01)* and (10)* 1

B. x (xx) * and (xx) * x

C. x^+ and x^+x^{*+}

D. All of these

Answer Report Discuss

Option: D

6:
A finite state machine with the following state table has a single input x and a single output z. If initial state is unknown, then shortest input sequence to reach the inal state C is

Present state	Next state, z	
	X = 1	X =0
A	D, 0	B, 0
B	B, 1	C, 1
C	B, 0	D, 1
D	B, 1	C, 0

A. 01

B. 10

C. 110

D. 110

Answer Report Discuss
Option: B

Explanation :

Click on Discuss to view users comments.

7:
An FSM can be used to add how many given integers ?

A. 1

B. 3

C. 4

D. 2

Answer Report Discuss
Option: D

Explanation :

Finite Automata (FA) or Finite State Machine to add two integers can be constructed using two states:
q0: Start state to represent carry bit is 0
q1: State to represent carry bit is 1

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8:
If two finite state machines are equivalent, they should have the same number of

A. states
B. edges
C. states and edges
D. none of these

Answer Report Discuss
Option: D

Explanation :

Click on Discuss to view users comments.

9:
For which of the following applications regular expressions can be used ?

A. Designing compilers

B. Developing text editors

C. Simulating sequential circuits

D. All of these

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

10:
L = {aP | p ; } is prime is

A. regular
B. not regular
C. accepted by DFA
D. accepted by PDA

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

11:
In an incompletely specified automata

A. no edge should be labelled epsilon
B. from any given state, there can't be any token leading to two different states
C. both (a) and (b)
D. start state may not be there

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

12:
If f : {a, b}* —> (a, b}* be given by f (n) = ax for every value of n ∈ (a, b}, then f is

A. one to one not onto

B. one to one and onto

C. not one to one and not onto

D. not one to one and onto

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

13:
The word 'formal' in formal languages means

- **A.** the symbols used have well-defined meaning
- **B.** they are unnecessary, in reality
- **C.** only form of the string of symbols is significant
- **D.** Both (a) and (b)

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

14:
Running time of NFA to DFA conversion including the case where NFA has e-transition is

- **A.** $0 (n^3)$
- **B.** $0 (n^3 3^2)$
- **C.** $0 (n^3 2^n)$
- **D.** $0 (n^2 2^n)$

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

15:
Which of the following statements is/are false ?

- **A.** The task of lexical analyzer is to translate the input source language text into tokens and determine the groups of tokens are inter-related.
- **B.** Two basic approaches to translation are generation and interpretation.
- **C.** A load-and-go compiler is capable o translating the source language text on a host machine A that can be later run on any target machine B.
- **D.** None of these

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

16:
Which of the following are not regular ?

- **A.** String of 0's whose length is a perfect square

B. Set of all palindromes made up of 0's and 1's
C. Strings of 0's, whose length is a prime number
D. All of these

Answer Report Discuss

Option: D

Explanation :
Strings of odd number of zeroes can be generated by the regular expression (00) *0.Pumping lemma can be used to prove the non-regularity of the other options.

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17:
The main difference between a DFSA and an NDFSA is

A. in DFSA, ε transition may be present

B. in NDFSA, ε transitions may be present

C. in DFSA, from any given state, there can't be any alphabet leading to two diferent states

D. in NDFSA, from any given state, there can't be any alphabet leading to two diferent states

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

18:
If w ∈ (a, b)* satisfy abw = wab, then (w) is

A. even

B. odd

C. null

D. none of these

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

19:
A PDM behaves like an FSM wnen the number of auxiliary memory it has, is

A. 0

B. 1
C. 2
D. None of these

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

20:
Finite state machine can recognize

A. any grammar
B. only context-free grammar
C. Both (a) and (b)
D. only regular grammar

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

21:
The major difference between a moore and mealy machine is that

A. output of the former depends on the present state and present input

B. output of the former depends only on the present state

C. output of former depends only on the present input

D. all of these

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

22:
Any given transition graph has an equivalent

A. regular expression

B. DFSM

C. NDFSM

D. all of these

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

23:
For which of the following application, regular expressions cannot be used ?

A. Designing computers

B. Designing compilers

C. Both (a) and (b)

D. Developing computers

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

24:
If S be an infinite set and be sets such that $S_1 \cup S_2 \cup \ldots \cup S_N = S$, then

A. atleast one of the set S_i is a finite set

B. not more than one of the sets S_i can be finite

C. atleast one of the sets S_i is an infinite set

D. not more than one of the sets S_i can be infinite

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

25:
Vienna Definition Language is an example of language definition facility based on

A. Mathematical semantics

B. Interpretative semantics

C. Translational semantics

D. Axiomatic semantics

Answer Report Discuss
Option: A

Explanation :

Click on Discuss to view users comments.

26:
Which of the following regular expressions denotes a language comprising all possible strings over the alphabet {a, b } ?

A. a* b*

B. (a | b)*

C. $(ab)^+$

D. (a | b*)

Answer Report Discuss
Option: B

Explanation :

Click on Discuss to view users comments.

27:
An FSM (Finite State Machine) can be considered to be a TM (Turing Machine) of finite tape length

A. without rewinding capability and unidirectional tape movement.

B. rewinding capacity, and unidirectional tape movement

C. without rewinding capability and bidirectional tape movement

D. rewinding capability and bidirectional tape movement

Answer Report Discuss
Option: A

Explanation :

Click on Discuss to view users comments.

28:
Palindromes can't be recognized by any FSM because

A. FSM can't remember arbitrarily large of information

B. FSM can't deterministically fix the mid-point

C. even if mid-point is known, FSM be can't be found whether, second half of the string matches the first half

D. all of these

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

29:
If ∑ = {a, b, c, d, e, f } then number of strings in ∑ of length 4 such that no symbol is used more than once in a string is

A. 35

B. 360

C. 49

D. 720

Answer Report Discuss

Option: B

Explanation :

Here string length is 4 so we can create string of length 4 by 6 values. Suppose at first place we can arrange any value by 6 methods.so 6. then Remaining total numbers are 5 so we can arrange them by 5 methods at second place. then remaining total numbers are 4 so we can arrange them by 4 methods. now remaining total numbers are 3 and we can arrange them by 3 methods. so according to permutation technique. We multiply them i.e. 6*5*4*3=360. So, 'B'

Click on Discuss to view users comments.

30:
A language L is accepted by a finite automaton if and only if it is

A. context - free

B. context-sensitive

C. recursive

D. Right-linear

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

31:
Can a DFA simulate NFA?

A. NO

B. YES

C. SOMETIMES

D. Depends on NFA

Answer Report Discuss
Option: B

Explanation :

Click on Discuss to view users comments.

32:
Which of the following statements is wrong ?

A. The language accepted by finite automata are the languages denoted by regular expressions

B. For every DFA there is a regular expression denoting its language

C. For a regular expression r, there does not exist NFA with L(r) any transit that accept

D. None of these

Answer Report Discuss
Option: C

Explanation :

Click on Discuss to view users comments.

33:
Regular expression a / b denotes the set

A. {a}

B. { ∈ , a, b }

C. {a, b}

D. { ab }

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

34:

Regular expression (a | b) (a | b) denotes the set

A. { a, b, ab, aa }

B. { a, b, ba, bb }

C. { a, b }

D. { aa, ab, ba, bb }

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

35:

Which of the following regular expressions denotes zero or more instances of an a or b ?

A. a | b

B. (ab)*

C. (a | b)*

D. a* I b

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

36:

Which of the following regular expressions denotes a language comprising all possible strings of even length over the alphabet (0 , 1) ?

A. (0 | 1) *

B. (0 | 1) (0 | 1)*

C. (00 01 10 11)*

D. (0 | 1) (0 | 1)(0 | 1) *

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

37:

The regular expression (a | b)* denotes the set of all strings

A. with zero or more instances of a or b

B. with one or more instances of a or b

C. equal to regular expression (a* b*)*

D. both (a) and (c)

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

38:

The string (a) | ((b) * (c)) is equivalent to

A. set of strings with either a or zero or more b's and one c

B. set of strings with either a or one or more b's and one c

C. b* c l a

D. both (a) and (c)

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

39:

An automation is a __________ device and a grammar is a __________ device.

A. generative, cognitive

B. generative, acceptor

C. acceptor, cognitive

D. cognitive, generative

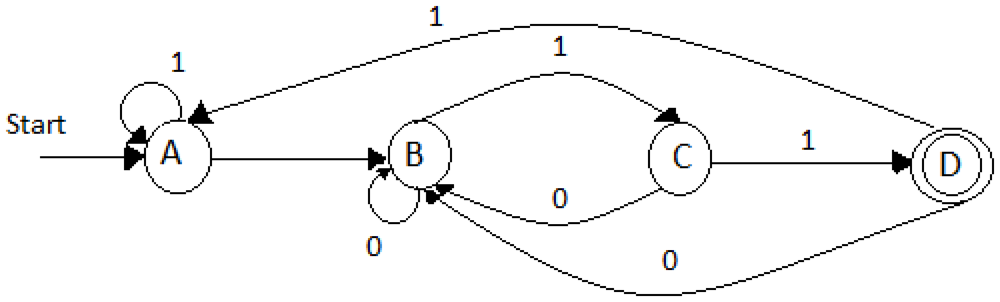
Answer **Report** **Discuss**

Option: D

Explanation :

Click on Discuss to view users comments.

40:
In the figure given below, a deterministic finite automation M has start state A and accepting state D. Which of the following regular expression denoted the set of all words accepted by M ?



A. 001

B. 10 * 1 * 0

C. (0 | 1) * 011

D. 1* 0 * 001

Answer **Report** **Discuss**

Option: C

Explanation :

Click on Discuss to view users comments.

41:
The regular sets are closed under

A. union

B. concatenation

C. Kleene's closure

D. all of these

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

42:

Dynamic errors can be detected at

A. compile time

B. Run time

C. both (a) and (b)

D. none of these

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

43:

If a and b be the regular expressions, then (a* ∪ b*) * is equivalent to

A. (a ∪ b) *

B. (b* ∪ a*)*

C. (b ∪ a)*

D. All of above

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

44:

Finite state machines __________ recognize palindromes

A. can

B. can't

C. may

D. may not

Answer Report Discuss
Option: B

Explanation :

Click on Discuss to view users comments.

45:
If S and T be language over Σ = {a, b } represented by regular expression (a + b *) * and (a + b) * , respectively, then

-

A. S ⊂ T

B. T⊂ S

C. S = T

D. S ∩ T= φ

Answer Report Discuss
Option: C

Explanation :

Click on Discuss to view users comments.

46:
Consider regular expression (0 + 1) (0 + 1) .... n times. Minimum state finite automaton that recognizes the language represented by this regular expression contains

A. n states

B. n + 1 states

C. n + 2 states

D. none of these

Answer Report Discuss
Option: B

Explanation :

Click on Discuss to view users comments.

47:
If regular set A is represented by A = (01 + 1)* and the regular set 'B' is represented by B = ((01)*1*)*, then

A. A ⊂ B

B. B ⊂ A

C. A and B are uncomparable

D. A=B

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

48:

Which of the following can be recognized by a Deterministic Finite-state Automaton ?

A. Numbers, 1,2,4, ... z^N ..... written in binary.

B.

Numbers 1, 2, 4, ..., z^N ...... written in unbinary.

C. Set of binary string in which number of zeros is same as the number of ones.

D. Set (1,101,11011,1110111, ...}

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

49:

Which of the following are not regular ?

A. String of 0's whose length is a perfect square

B. Set of all palindromes made up of 0's and 1's

C. Strings of 0's, whose length is a prime number

D. All of these

Answer Report Discuss

Option: D

Explanation :

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50:

An FSM with

A. 1 stack is more powerful than an FSM with no stack

B. 2 stacks is more powerful than a FSM with 1 stack

C. both (a) and (b)

D. none of these

Answer Report Discuss
Option: C

Explanation :

Click on Discuss to view users comments.

51:
If w ∈ (a, b)* satisfy abw = wab, then (w) is

A. even

B. odd

C. null

D. none of these

Answer Report Discuss
Option: A

Explanation :

Click on Discuss to view users comments.

52:
A PDM behaves like an FSM wnen the number of auxiliary memory it has, is

A. 0

B. 1

C. 2

D. none of these

Answer Report Discuss
Option: A

Explanation :

Click on Discuss to view users comments.

53:
A finite state machine with the following state table has a single input x and a single output z

Present state	Next state, z	
	x = 1	x = 0
A	D, 0	B, 0
B	B,1	C,1
C	B, 0	D, 1
D	B, 1	C, 0

If the initial state is unknown, then shortest input sequence to reach the final state C is

A. 01

B. 10

C. 10

D. 110

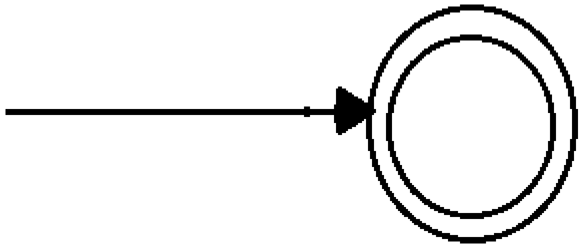
Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

54:
FSM shown in the



figure

A. all strings

B. no string

C. ε- alone

D. none of these

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

55:
If f : {a, b}* ---> {a , b } * be given by f(n) = ax for every value of n ∈ {a, b}, then f is

A. one to one not onto

B. one to one and onto

C. not one to one and not onto

D. not one to one and onto

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

56:

If two finite states machine M and N are isomorphic, then

A. M can be transformed to N, merely re-labelling its states

B. M can be transformed to N, merely re-labelling its edges

C. M can be transformed to N, merely re-labelling its edges

D. none of these

Answer Report Discuss

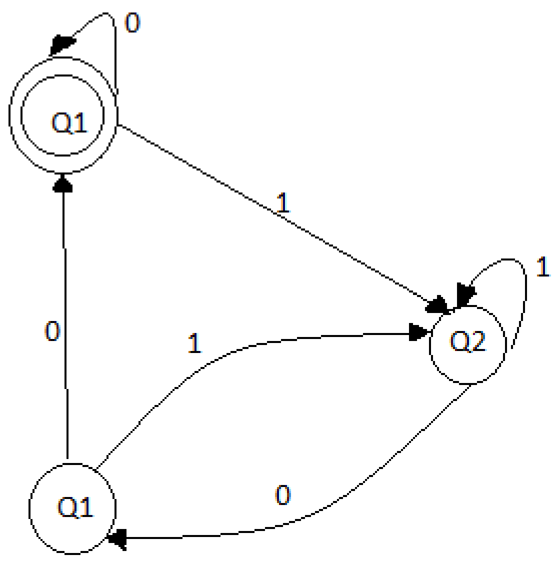
Option: A

Explanation :

Click on Discuss to view users comments.

57:

Regular expression corresponding to the state diagram given in the figure is



A. (0+1(1 + 01)* 00)*

B. (1 + 0 (0 + 10) 00)*

C. (0 + 1 (1 + 10) 00)*

D. (1 + 0(1 + 00) 11)*

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

58:
Two finite state machines are said to be equivalent if they

A. have same number of states

B. have same number of edges

C. have same number of states and edges

D. recognize same set of tokens

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

1:
Correct hierarchical relationship among context- free, right-linear, and context-sensitive language is

A. context-free ⊂ right-linear ⊂ context-sensitive

B. context-free ⊂ context-sensitive ⊂ right-linear

C. context-sensitive ⊂ right-inear ⊂context-free

D. right-linear ⊂context-free ⊂context-sensitive

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

2:
In the following grammar :

x : : = x ⊕ y | 4
y : : = z * y I 2
z : : = id

which of the folowing is true ?

A. ⊕ is left associative while * is right associative

B. Both ⊕ and * are left associative

C. ⊕ is right associative while * is left associative

D. None of these

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

3:
Which of the following CFG's can't be simulated by an FSM ?

A. S --> Sa | b

B. S --> aSb | ab

C. S --> abX, X --> cY, Y --> d | aX

D. None of these

Answer Report Discuss

Option: B

Explanation :

Option (b) generates the set {a^n b^n ,n=1,2,3 ....}which is not regular ,Option (a) is left linear where as option (C) is right linear .

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4:
ADG is said to be in Chomsky Form (CNF), if all the productions are of the form A --> BC or
A --> a. Let G be a CFG in CNF. To derive a string of terminals of length x , the number of productions to be used is

A. 2x - 1
B. 2x
C. 2x + I
D. None of these

Answer Report Discuss

Option: A

Explanation :

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5:

Which of the following statements is correct?

A. $A = \{$ If $a^n b^n \mid n = 0,1, 2, 3 ..\}$ is regular language

B. Set B of all strings of equal number of a's and b's deines a regular language

C. L (A* B*)∩ B gives the set A

D. None of these

Answer Report Discuss
Option: C

6:
P, Q, R are three languages, if P and R are regular and if PQ = R, then

A. Q has to be regular
B. Q cannot be regular
C. Q need not be regular
D. Q cannot be a CFL

Answer Report Discuss
Option: C

Explanation :

Click on Discuss to view users comments.

7:
A class of language that is closed under

A. union and complementation has to be closed under intersection
B. intersection and complement has to be closed under union
C. union and intersection has to be closed under complementation
D. both (A) and (B)

Answer Report Discuss
Option: D

Explanation :

Click on Discuss to view users comments.

8:
The productions
E—>E+E
E—>E—E
E-->E*E
E —> E / E
E —> id

A. generate an inherently ambiguous language

B. generate an ambiguous language but not inherently so

C. are unambiguous

D. can generate all possible fixed length valid computation for carrying out addition, subtraction, multipication and division, which can be expressed in one expression

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

9:

Which of the folowing definitions below generates the same language as L, where L = {xn yn such that n > = 1} ?

I. E —> xEy | xy

II. xy | (x+ xyy+)

III .x+y+

A. I only
B. I and II
C. II and III
D. II only

Answer Report Discuss

Option: A

Explanation :

II generates strings like xxyyy, which are not supposed to be.

III generates strings like xyy, which are not supposed to be.
I can be verified to generate all the strings in L and only those.

Click on Discuss to view users comments.

10:

Following context free grammar

S —> aB | bA

A —>b | aS | bAA

B —> b | bS | aBB

generates strings of terminals that have

A. equal number of a's and b's
B. odd number of a's and odd number b's
C. even number of a's and even number of b's
D. odd number of a's and even number of a's

Answer Report Discuss

Option: A

11:

Define for the context free language

L< {0;1} init (L) = { u | u v ε L for some v in {0, 1}}

If L { w | w is nonempty and has an equal number of 0's and 1's}, then init (L) is set of all binary strings

A. with unequal numbers of 0's and 1's.

B. including the null string.

C. Both (a) and (b)

D. None of these

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

12:
Which of the following CFG's can't be simulated by an FSM ?

A. s ---> sa | a
B. s ---> abX , X --> cY, Y --> a | axY
C. s ---> a sb | ab
D. none of these

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

13:
Basic limitation of FSM is that it

A. cannot remember arbitrary large amount of information
B. sometimes fails to recognize grammars that are regular
C. sometimes recognizes grammars are not regular
D. None of these

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

14:
Which of the following is not possible algorithmically ?

A. Regular grammar to context free grammar
B. Non-deterministic FSA to deterministic FSA
C. Non-deterministic PDA to deterministic PDA
D. None of these

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

15:
The set {anbn | n = 1, 2, 3 ...} can be generated by the CFG

- **A.** S �>ab | aSb
- **B.** S �>aaSbb + abS
- **C.** S�> ab | aSb | E
- **D.** S �>aaSbb | ab | aabb

Answer Report Discuss

Option: D

16:
The CFG
s---> as | bs | a | b

is equivalent to regular expression

- **A.** (a + b)
- **B.** (a + b) (a + b)*
- **C.** (a + b) (a + b)
- **D.** None of these

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

17:
Consider the grammar :

S —> ABCc | Abc
BA —> AB
Bb —> bb
Ab —> ab
Aa —> aa

Which of the following sentences can be derived by this grammar

- **A.** abc
- **B.** aab
- **C.** abcc
- **D.** abbb

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

18:
Pumping lemma is generally used for proving that

- **A.** given grammar is regular

B. given grammar is not regular
C. whether two given regular expressions are equivalent or not
D. None of these

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

19:
The language of all words with at least 2 a's can be described by the regular expression

A. (ab)*a and a (ba)*
B. (a + b)* ab* a (a + b)*
C. b* ab* a (a + b)*
D. all of these

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

20:
Any string of terminals that can be generated by the following CFG is
S-> XY
X--> aX | bX | a
Y-> Ya | Yb | a

A. has atleast one 'b'
B. should end in a 'a'
C. has no consecutive a's or b's
D. has atleast two a's

Answer Report Discuss

Option: D

21:
L = (an bn an | n = 1,2,3) is an example of a language that is

A. context free
B. not context free
C. not context free but whose complement is CF
D. both (b) and (c)

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

22:
If Σ = (0, 1), L = Σ* and R = (0n 1nsuch that n > 0)

then languages L ∪ R and R respectively are

A. Regular, Regular

B. Regular, Not regular

C. Not regular, Not regular

D. None of these

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

23:
FSM can recognize

A. any grammar
B. only CG
C. Both (a) and (b)
D. only regular grammar

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

24:
Set of regular languages over a given alphabet set is closed under

A. union

B. complementation

C. intersection

D. All of these

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

25:
Which of the following statement is correct?

A. All languages can not be generated by CFG

B. Any regular language has an equivalent CFG

C. Some non regular languages can't be generated by CFG

D. both (b) and (c)

Answer Report Discuss

Option: D

26:
Given A = (0,1) and L = A*. If R = (0n 1n, n > 0) , then language L ∪ R and R are respectively

A. regular, regular

B. not regular, regular

C. regular, not regular

D. context free, not regular

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

27:
Define for a context free language

L ≤ {0 ; 1} init (L) = {u/uv ε L for some v in {0,1}}

(in other words, init (L) is the set of prefixes of L)

Let L {w/w is noempty and has an equal number of 0's and 1's)

Then init (L) is

A. set of all binary strings with unequal number of 0's and 1's

B. set of all binary strings including the null string

C. set of all binary strings with exactly one more 0's than the number of 1's or 1 more than the number of 0's

D. none of these

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

28:
If L1 and L2 are context free language and R a regular set, then which one of the languages below is not necessarily a context free language?

A. $L_1 L_2$

B. $L_1 \cap L_2$

C. $L_1 \cap R$

D. $L_1 \cup L_2$

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

29:

Consider a grammar with the following productions

S--> aab | bac | aB
S --> α S | b
S --> α b b | ab
Sα --> bdb | b

The above grammar is

A. Context free

B. regular

C. context sensitive

D. LR (k)

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

30:

What can be said about a regular language L over {a} whose minimal finite state automation has two states?

A. L must be { a^n | n is odd}

B. L must be { a^n | n is even}

C. L must be {a^n | > 0}

D. Either L must be {a^n | n is odd}, or L must be {a^n | n is even}

Answer Report Discuss

Option: B

36:

Let L be a language recognizable by a finite automaton. The language

REVERSE (L) = {w such that w is the reverse of v where v ∈ L } is a

A. regular language

B. context-free language

C. context-sensitive language

D. recursively enumerable language

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

37:

The grammars G = ({ s }, { 0, 1 }, p , s)
where p = (s —> 0S1, S —> OS, S —> S1, S —>0} is a

A. recursively enumerable language

B. regular language

C. context-sensitive language

D. context-free language

Answer Report Discuss

38:

The logic of pumping lemma is a good example of

A. pigeon-hole principle

B. divide-and-conquer technique

C. recursion

D. iteration

Answer Report Discuss

Option: A

Explanation :

The pigeon hole principle is nothing more than the obvious remark: if you have fewer pigeon holes than pigeons and you put every pigeon in a pigeon hole, then there must result at least one pigeon hole with more than one pigeon. It is surprising how useful this can be as a proof strategy.

In the theory of formal languages in computability theory, a pumping lemma or pumping argument states that, for a particular language to be a member of a language class, any sufficiently long string in the language contains a section, or sections, that can be removed, or repeated any number of times, with the resulting string remaining in that language. The proofs of these lemmas typically require counting arguments such as the pigeonhole principle. So the answer is 'A'

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39:
The intersection of CFL and regular language

A. is always regular

B. is always context free

C. both (a) and (b)

D. need not be regular

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

40:
For two regular languages

$L_1 = (a + b)^* a$ and $L_2 = b (a + b)^*$

,
the intersection of L_1 and L_2 is given by

A. $(a + b)^* ab$

B. $ab (a + b)^*$

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

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

Answer Report Discuss

Option: D

31:
In a context-sensitive grammar, number of grammar symbols on the left hand side of a production can't be greater than the number of

A. grammar symbols on the right hand side

B. terminals on the right hand side

C. non-terminals on the right hand side

D. all of these

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

32:
In a context-free grammar

A. ε can't be the right hand side of any production

B. terminal symbols can't be present in the left hand side of any production

C. number of grammar symbols in the left hand side is not greater than the number of grammar symbols in the right hand side

D. all of these

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

33:
CFG can be recognized by a

A. push-down automata

B. 2-way linear bounded automata

C. both (a) and (b)

D. none of these

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

34:
Which of the following statements are true?
I. The set of all odd integers is a monoid under multiplication.
II. The set of all complex number is a group under multiplication
III. The set of all integers under the operation * given by a * b = a+b-ab is a monoid
IV. Zs under symmetric difference ⊽ defined by
A ⊽B = (A-B) ∪ (B-A) is an abelian group

A. I and II

B. I, III and IV

C. I, II and III

D. I, II and IV

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

35:

A given grammar is called ambiguous if

A. two or more productions have the same non-terminal on the left hand side

B. a derivation tree has more than one associated sentence

C. there is a sentence with more than one derivation tree corresponding to it

D. brackets are not present in the grammar

Answer Report Discuss

Option: C

41:

Context free grammar is not closed under

A. product

B. union

C. complementation

D. kleen star

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

42:

If L be a language recognizable by a finite automaton, then language front

{L} = { w such that w is prefix of v where v ∈ L }, is a

A. regular language

B. context-free language

C. context-sensitive language

D. recursive enumeration language

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

43:
For which of the following application, regular expressions can not be used ?

A. Designing computers

B. Designing compilers

C. Both (a) and (b)

D. Developing computers

Answer Report Discuss
Option: C

Explanation :

For Reference Link **Click Here**

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44:
Consider the following grammar

S --> Ax / By
A --> By/Cw
B --> x / Bw
C--> y

Which of the regular expressions describe the same set of strings as the grammar ?

A. xw * y + xw * yx + ywx

B. xwy + xw * xy + ywx

C. xw * y + xw x yx + ywx

D. xw xy + xww * y + ywx

Answer Report Discuss
Option: A

Explanation :

Click on Discuss to view users comments.

45:
Which of the following statements is (are) correct ?

A. Recursive languages are closed under complementation.

B. If a language and its complement are both regular, the language is recursive

C. Set of recursively enumerable language is closed under union

D. All of these

Answer Report Discuss

Option: D

46:
Which of the following statement is wrong ?

A. Any regular language has an equivalent context-free grammar.

B. Some non-regular languages can't be generated by any context-free grammar

C. Intersection of context free language and a regular language is always context-free

D. All languages can be generated by context- free grammar

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

47:
Consider a grammar :

G = ({ x , y) , { s , x , y } , p , s)

where elements of parse :

S--> x y
S -->y x
x--> x z
x--> x
y--> y
z--> z

The language L generated by G most accurately is called

A. Chomsky type 0

B. Chomsky type 1

C. Chomsky type 2

D. Chomsky type 3

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

48:
Consider a grammar :

G = { { S } , { 0 , 1 } , p , s }

where elements of p are:

S --> ss
S--> 0S1
S--> 1S0
S--> empty

The grammer will generate

A. regular language

B. context-free language

C. context-sensitive language

D. recursive enumerable language

Answer Report Discuss
Option: A

Explanation :

Click on Discuss to view users comments.

49:
A grammar that produces more than one parse tree for some sentence is called

A. ambiguos

B. unambigous

C. regular

D. none of these

Answer Report Discuss
Option: A

Explanation :

Click on Discuss to view users comments.

50:
Given a grammar G a production of G with a dot at some position of the right side is called

A. LR (0) item of G

B. LR (1) item of G

C. both (a) and (b)

D. none of these

Answer Report Discuss
Option: A

56:
Context-free grammar can be recognized by

A. finite state automation

B. 2-way linear bounded automata

C. push down automata

D. both (b) and (c)

Answer Report Discuss
Option: D

Explanation :

Click on Discuss to view users comments.

57:
The language L = (0n 1n 2n where n > 0) is a

A. context free language

B. context-sensitive language

C. regular language

D. recursive enumerable language

Answer Report Discuss
Option: B

Explanation :

Click on Discuss to view users comments.

58:
Context free language are closed under

A. union, intersection

B. union, kleene closure

C. intersection, complement

D. complement, kleene closure

Answer Report Discuss

Option: B

Explanation :

For Reference **Click Here**

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59:

If G = ({S}, {a}, {S -> SS), S),

then language generated by G is

A. ✔ L (G) = φ

B. L(G) = a^n

C. L (G) = a*

D. L (G) = $a^n b a^n$

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

60:

Grammar

$S \rightarrow a,$

$S \rightarrow A_3A_4,$

$A_3 \rightarrow A_1, A_3, A_2,$

$A_3 \rightarrow A_1 A_2, A_1$

$A_2 \rightarrow aA_2A_1,$

$A_1a \rightarrow a A_1,$

$A_2a \rightarrow aA_2,$

$A_1A_4 \rightarrow A_4a,$

$A_2A_4 \rightarrow A_5a,$

$A_2A_5 \rightarrow A_5a,$

$A_5 \rightarrow a$

_______________ generates

A. ✔ a^{n^2}

B. n^{2a}

C. $2a^n$

D. none of these

Answer Report Discuss

Option: A

61:

If L_1 = {x | x is a palindrome in (0 + 1)*}
L_2 = {letter (letter + digit)* };
L_3 = (0n 1n 2n | n > 1}
L_4 = {ambnam+n | m, n > 1}

then which of the following statement is correct ?

A. L_1 is context free language and L_3 is context sensitive language

B. L_2 is a regular set and L_4 is not a context free language

C. Both L_1 and L_2 are regular sets

D. Both L_3 and L_4 are context-sensitive languages

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

62:
A grammar to generate
{ (ab)n I n ≥ 1 } ∪ { (ba)n I n ≥ 1 }
is constructed as

A. S ---> S_1, S_1 ---> abS_1, S_1 ---> ab, S ---> S_2, S_2 —> baS_2, S_2 —> ba

B. S ---> S_1 , S_l ---> aS_1, S_1 ---> ab, S ---> S_2, S_2 ---> bS_2, S_2 —> bc

C. S —> S_1, S_1—>S_2, S_2 —> S_1a, S_1 —> ab, S_2 —> ba

D. none of these

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

63:
Consider the grammar
S ---> PQ | SQ | PS
P ---> x
Q--> y
To get a string of n terminals, the number of productions to be used is

A. n^2

B. n + 1

C. 2n

D. 2n - 1

Answer Report Discuss
Option: D

Explanation :

Click on Discuss to view users comments.

64:
What is the highest type number which can be applied to the following grammar ?
S —> Aa, A —> Ba, B —> abc

A. Type 0

B. Type 1

C. Type 2

D. Type 3

Answer Report Discuss
Option: C

Explanation :

Click on Discuss to view users comments.

65:
Following syntax-directed translation scheme is used with a shift reduction (bottom up) parser that perform the action in braces immediately after a reduction by the corresponding production

A —> aB {print "(1)" A —> c {print "1"),
B —> Ab {print *2"}.

When parser is aaacbbb, then string printed

A. 0202021

B. 1202020

C. 1020202

D. none of these

Answer Report Discuss
Option: A

1:
Which of the following is complement of a?

A. Recursive language is recursive

B. Recursively enumerable language is recursively enumerable

C. Recursive language is either recursive or recursively enumerable

D. None of these

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

2:
If nL can be recognized by a multitape TM with time complexity f, then L can be recognized by a one-tape machine with time complexity DSD

A. $O(f^2)$

B. $o(f^2)$

C. o(h)

D. $O(h^2)$

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

3:
If T is a TM recognizing L, and T reads every symbol in the input string, $\tau_T(n) \geq 2n + 2$, then any language that can be accepted by a TM T with $\tau_T(n) = 2n + 2$ is

A. regular

B. not regular

C. uncertain

D. none of these

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

4:
Consider an alternate Turing machine model, in which there is an input tape on which the tape head can move in both directions but cannot write, and one or more work tapes, one of which serves as an output tape. For a function f, denoted by DSpace (f) , the set of languages that can be recognized by a Turning machine of this type which uses no more than f(n) squares on any work tape for any input string of length n. The only restriction we

need to make on f is that f(n) > 0 for every n. The language of balanced strings of parentheses are in

- **A.** DSpace (1+ ⌈$\log_2$ (n + 1 ⌉). (⌈ x ⌉) means the smallest integer greater than or equal to x.
- **B.** DSpace (1+ ⌈$\log_2$ n⌉)
- **C.** DSpace (1+ ⌈ $\log_2 n^2$⌉)
- **D.** none of these

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

5:
Which of the following problems is solvable ?

- **A.** Writing a universal Turing machine
- **B.** Determining of an arbitrary turing machine is an universal turing machine
- **C.** Determining of a universal turing machine can be written for fewer than k instructions for some k
- **D.** Determining of a universal turing machine and some input will halt

Answer Report Discuss

Option: A

6:
Which of the following is not primitive recursive but partially recursive ?

- **A.** Carnot's function
- **B.** Ricmann function
- **C.** Bounded function
- **D.** Ackermann's function

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

7:
Turing machine (TM) is more powerful than FMS (Finite State Machine) because

A. tape movement is confined to one direction

B. it has no finite state

C. it has the capability to remember arbitrarily long sequences of input symbols

D. none of these

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

8:
If f : N--> N. If L can be recoognized by a TM T, so that $\tau_T(n) \le f(n)$ for all but finitely many n, then (Time (f) means Time (max (f, 2n +2))).

A. L ∈Time (f)

B. L ∈ Time(cf)

C. L ∈ Time (h)

D. none of these

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

9:
Let s is a step-counting function satisfying s(n) ≥ n, and L be a language accepted by a (multitape) TM T. If tape heads of T do not move past square s(n) on any of the tapes for an input string of length n, then T ∈

A. Space(s)

B. F(n)

C. Time(f)

D. Time(h)

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

10:
Which of the following statements is false ?

A. Halting problem of Turing machines is undecidable

B. Determining whether a context-free grammar is ambiguous is undecidable

C. Given two arbitrary context-free grammars G_1 G_2 and it is undecidable whether L (G_1) = L (G_2).

D. Given two regular grammars G_1 G_2 and it is undecidable whether L (G_1) = L (G_2)

Answer Report Discuss

Option: D

11:
Bounded minimalization is a technique for

A. proving whether a promotive recursive function is turning computable or not

B. proving whether a primitive recursive function is a total function or not

C. generating primitive recursive functions

D. generating partial recursive functions

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

12:
If there exists a language L, for which there exists a TM, T, that accepts every word in L and either rejects or loops for every word that is not in L, is called

A. recursive

B. recursively enumerable

C. NP-HARD

D. none of these

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

13:
Which of the following statement(s) is/are correct?

A. L = {a^n b^n a^n | n = 1, 2, 3...} is recursively enumerable

B. Recursive languages are closed under union

C. Every recursive is closed under union

D. ✔ All of these

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

14:

Universal TM influenced the concept of

A. stored program computers

B. interpretative implementation of programming language

C. computability

D. ✔ all of these

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

15:

Number of external states of a UTM should be atleast

A. 1

B. ✔ 2

C. 3

D. 4

Answer Report Discuss

Option: B

16:

The statement, "A TM can't solve halting problem" is

A. ✔ true

B. false

C. still an open question

D. all of these

Answer Report Discuss

Option: A

Explanation :

Click on Discuss to view users comments.

17:

If there exists a TM which when applied to any problem in the class, terminates, if correct answer is yes and may or may not terminate otherwise is called

A. stable

B. unsolvable

C. partially solvable

D. unstable

Answer Report Discuss

Option: C

Explanation :

Click on Discuss to view users comments.

18:

Given a Turing machine T and a step-counting function f, is the language accepted by T in Time(f) ? This decision problem is

A. solvable

B. unsolvable

C. uncertain

D. none of these

Answer Report Discuss

Option: B

Explanation :

Click on Discuss to view users comments.

19:

A total recursive function is a

A. partial recursive function

B. premitive recursive function

C. both (a) and (b)

D. none of these

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

20:

The running time T (n), where 'n' is input size of a recursive algorithm, is given as

$T(n) = c + T(n - 1)$, if $n > 1$

$= d$, if $n \le 1$

The order of the algorithm is

-

A. n^2

B. n

C. n^3

D. n^n

Answer Report Discuss

Option: B

21:

Next move function δ of a Turing machine M = (Q, Σ , Γ, δ, q_0, B, F) is a mapping

A. $\delta : Q \times \Sigma \rightarrow Q \times \Gamma$

B. $\delta : Q \times \Gamma \rightarrow Q \times \Sigma \times \{L, R\}$

C. $\delta : Q \times \Sigma \rightarrow Q \times \Gamma \times \{L, R\}$

D. $\delta : Q \times \Gamma \rightarrow Q \times \Gamma \times \{L, R\}$

Answer Report Discuss

Option: D

Explanation :

Click on Discuss to view users comments.

22:

If L can be recognized by a TM T with a doubly infinite tape, and τ_t = f, then L can be recognized by an ordinary TM with time complexity

A. O(f)

B. o(f)

C. O(h)

D. o(h)

Answer Report Discuss

Option: A