1. Suppose A->xBz and B->y, then the simplified grammar would be:
a) A->xyz
b) A->xBz|xyz
c) A->xBz|B|y
d) none of the mentioned
View Answer
Answer: a
Explanation: For the first step, substitute B in first production as it only produces terminal and remove B production as it has already been utilized. We get A->xBz|xyz and now, as B has no production, we eliminate the terms which hold the variable B, thus the answer remain A->xyz.

2. Given Grammar: S->A, A->aA, A->e, B->bA
Which among the following productions are Useless productions?
a) S->A
b) A->aA
c) A->e
d) B->bA
View Answer
Answer: d
Explanation: Some derivations are not reachable from the starting variable. As B is not reachable from the starting variable, it is a useless symbol and thus, can be eliminated.

3. Given:
S->...->xAy->...->w
if _____, then A is useful, else useless symbol.
a) A is a non terminal
b) A is a terminal
c) w Î L
d) w Ë L
View Answer
Answer: c
Explanation: Whatever operation we perform in intermediate stages, if the string produced belongs to the language, A is termed as useful and if not, not a useful variable.

4. Given:
S->aSb
S->e
S-> A
A->aA

B->C
C->D
The ratio of number of useless variables to number of useless production is:
a) 1
b) 3/4
c) 2/3
d) 0
View Answer
Answer: a
Explanation: A, B, C, D are the useless symbols in the given grammar as they never tend to lead to a terminal. The productions S-> A, A->aA, B->C, C->D are also termed as useless production as they will never produce a string to the grammar.

5. Given grammar G:
S->aS|A|C
A->a
B->aa
C->aCb
Find the set of variables thet can produce strings only with the set of terminals.
a) {C}
b) {A,B}
c) {A,B,S}
d) None of the mentioned
View Answer
Answer: c
Explanation: First step: Make a set of variables that directly end up with a terminal
Second step: Modify the set with variables that produce the elements of above
generated set.
The rest variables are termed as useless.

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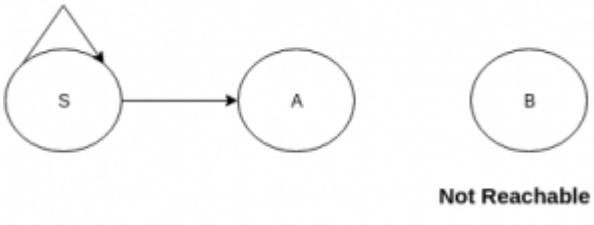
6. Given grammar:
S->aS|A
A->a
B->aa
Find the number of variables reachable from the Starting Variable?
a) 0
b) 1
c) 2

d) None of the mentioned
View Answer
Answer: b
Explanation: Use a dependency graph to find which variable is reachable and which is not.



7. Inorder to simplify a context free grammar, we can skip the following operation:
a) Removal of null production
b) Removal of useless symbols
c) Removal of unit productions
d) None of the mentioned
View Answer
Answer: d
Explanation: Inorder to simplify the grammar all of the process including the removal of null productions, unit productions and useless symbols is necessary.

8. Given a Grammar G:
S->aA
A->a
A->B
B->A
B->bb
Which among the following will be the simplified grammar?
a) S->aA|aB, A->a, B->bb
b) S->aA|aB, A->B, B->bb
c) S->aA|aB, A->a, B->A
d) None of the emntioned
View Answer
Answer: a
Explanation: Step 1: Substitute A->B
Step 2: Remove B->B
Step 3: Substitute B->A
Step 4: Remove Repeated productions

9. Simplify the given grammar:
A-> a| aaA| abBc
B-> abba| b

a) A-> a| aaA| ababbAc| abbc
b) A-> a| aaA| ababbAc| abbc, B-> abba|b
c) A-> a| aaA| abbc, B->abba
d) None of the mentioned
View Answer
Answer: a
Explanation: Using the substitution rules, we can simply eradicate what is useless and thus produce the simplified result i.e. A-> a| aaA| ababbAc| abbc.

10. In context to the process of removing useless symbols, which of the following is correct?
a) We remove the Nullable variables
b) We eliminate the unit productions
c) We eliminate products which yield no terminals
d) All of the mentioned
View Answer
Answer: c
Explanation: In the process of removal of useless symbols, we want to remove productions that can never take part in any derivation.

1. The use of variable dependency graph is in:
a) Removal of useless variables
b) Removal of null productions
c) Removal of unit productions
d) None of the mentioned
View Answer
Answer: a
Explanation: We use the concept of dependency graph inorder to check, whether any of the variable is reachable from the starting variable or not.

2. The variable which produces an epsilon is called:
a) empty variable
b) nullable
c) terminal
d) all of the mentioned
View Answer
Answer: b
Explanation: Any variable A for which the derivation: A->*e is possible is called Nullable.

3. Statement:
For A-> e ,A can be erased. So whenever it appears on the left side of a production, replace with another production without the A.
State true or false:
a) true
b) false
View Answer
Answer: b
Explanation: A can be erased. So whenever it appears on the right side of the production, replace with another production without the A.

4. Simplify the given grammar:
S->aXb
X->aXb | e
a) S->aXb | ab, X-> aXb | ab
b) S->X | ab, X-> aXb | ab
c) S->aXb | ab, X-> S | ab
d) None of the mentioned
View Answer
Answer: a
Explanation: As X is nullable, we replace every right hand side presence of X with e and produce the simplified result.

5. Consider the following grammar:
A->e
B->aAbC
B->bAbA
A->bB
The number of productions added on the removal of the nullable in the given grammar:
a) 3
b) 4
c) 2
d) 0
View Answer
Answer: b
Explanation: The modified grammar aftyer the removal of nullable can be shown as:
B->aAbC| abC
B->bAbA| bbA| bAb| bb
A->bB

6. Let G=(V, T, P, S) be a CFG such that _____. Then there exists an equivalent grammar G' having no e productions.
a) e ∈ L(G)
b) w ∉ L(G)
c) e ∉ L(G)
d) w ∈ L(G)
View Answer
Answer: c
Explanation: Theorem: Let G = (V, T, S, P) be a CFG such that e ∉ L(G). Then there exists an equivalent grammar G' having no e-productions.

7. For each production in P of the form:
A-> x1x2x3...xn
put into P' that production as well as all those generated by replacing null variables with e in all possible combinations. If all x(i) are nullable,
a) A->e is put into P'
b) A->e is not put into P'
c) e is a member of G'
d) None of the mentioned
View Answer
Answer: b
Explanation: It is an exception that A->e is not put into P' if all x(i) are nullable variables.

8. For the given grammar G:
S->ABaC
A->BC
B->b| e
C->D| e
D-> d
Remove the e productions and generate the number of productions from S in the modified or simplified grammar.
a) 6
b) 7
c) 5
d) 8
View Answer
Answer: d
Explanation: The grammar after the removal of epsilon production can be shown as:
S->ABaC| AaC| ABa| Aa| a| aC| Ba| BaC
A->BC| B| C
B->b

C->D
D-> d

9. Consider G=({S,A,B,E}, {a,b,c},P,S), where P consists of S →AB, A →a, B →b and E →c.
Number of productions in P’ after removal of useless symbols:
a) 4
b) 3
c) 2
d) 5
View Answer
Answer: a
Explanation:
P’= S->AB, A->a, B-> b,
V’={S, A, B},
∑’={a, b}

10. Given grammar G:
S->aS| AB
A-> e
B-> e
D-> b
Reduce the grammar, removing all the e productions:
a) S->aS| AB| A| B, D-> b
b) S->aS| AB| A| B| a, D-> b
c) S->aS| AB| A| B
d) None of the mentioned
View Answer
Answer: b
Explanation: We will replace all the nullables wherever they appear in the right hand side of any production. D will not be erased as we are just removing nullable variables not completely simplifying the grammar.

1. Which of the following is the format of unit production?
a) A->B
b) A->b
c) B->Aa

d) None of the mentioned
View Answer
Answer: a
Explanation: Any production of the format A-> B where A and B belongs to the V set, is called Unit production.

2. Given Grammar G:
S->aA
A->a| A
B->B
The number of productions to be removed immediately as Unit productions:
a) 0
b) 1
c) 2
d) 3
View Answer
Answer: c
Explanation: The productions in the format A-> A are removed immediately as they produce self and that is not a terminal or will not lead to a string. Hence, it is removed immediately.

3. Given grammar:
S->aA
A->a
A->B
B-> A
B->bb
Which of the following is the production of B after simplification by removal of unit productions?
a) A
b) bb
c) aA
d) A| bb
View Answer
Answer: b
Explanation: The simplified grammar can be presented as follows:
S->aA| aB
A->a
B-> bb

4. If grammar G is unambiguous, G' produced after the removal of Unit production will be:
a) ambiguous
b) unambiguous
c) finite
d) cannot be said
View Answer
5. If C is A-derivable, C->B is a production, and B ¹ A, then B is
a) nullable
b) Non-derivable
c) A-derivable
d) None of the mentioned
View Answer
Answer: c
Explanation:
If A-> B is a production, B is called A- derivable.
If C is A-derivable, C->B is a production, and B ¹ A, then B is A -derivable.
No other variables are A-derivable.

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6. A can be A-> derivable if and only if _____
a) A-> A is actually a production
b) A->B, B-> A exists
c) All of the mentioned
d) None of the mentioned
View Answer
Answer: a
Explanation: The format says: If A->B is a production, B is called A-derivable.Thus A to be A-derivable, a production : A-> A need to exist.

7. Given Grammar:
T-> T+R| R
R-> R*V| V
V->(T)| u
When unit productions are deleted we are left with
T-> T+R| _____|(T)| u
R->R*V|(T)| u
V-> (T)| u
Fill in the blank:
a) T*V
b) T+V
c) R*T
d) R*V
View Answer

Answer: d
Explanation: The grammar produced after the elimination of unit production is:
T-> T+R| R*V| (T)| u
R->R*V|(T)| u
V-> (T)| u

8. Given grammar G:
S-> ABA, A->aA|e, B-> bB|e
Eliminate e and unit productions. State the number of productions the starting variable holds?
a) 6
b) 7
c) 9
d) 5
View Answer
Answer: b
Explanation: After reduction the grammar looks like:
S->ABA| AB| BA| AA| Aa| a| bB| b
A->aA| a
B->bB| b

9. Given grammar G:
S-> A| B| C
A-> aAa| B
B-> bB|bb
C->aCaa|D
D->baD|abD|aa
Eliminate e and unit productions and state the number of variables left?
a) 5
b) 4
c) 3
d) 2
View Answer
Answer: a
Explanation: The reduced production:
S->aAa| bB|bb aCaa| baD| abD| aa, A->aAa| bB| bb, B->bB| bb, C->aCaa| baD| abD| aa, D-> baD| abD| aa

10. Which of the following variables in the given grammar is called live variable?
S->AB
A->a
a) S
b) A

c) B
d) None of the mentioned
View Answer
Answer: b
Explanation: Any variable A for which there is a production A-> x with x E Σ* is called live.

1. The format: A->aB refers to which of the following?
a) Chomsky Normal Form
b) Greibach Normal Form
c) Backus Naur Form
d) None of the mentioned
View Answer
Answer: b
Explanation: A context free grammar is in Greibach Normal Form if the right hand sides of all the production rules start with a terminal, optionally followed by some variables.

2. Which of the following does not have left recursions?
a) Chomsky Normal Form
b) Greibach Normal Form
c) Backus Naur Form
d) All of the mentioned
View Answer
Answer: b
Explanation: The normal form is of the format:
A->aB where the right hand side production tends to begin with a terminal symbo, thus having no left recursions.

3. Every grammar in Chomsky Normal Form is:
a) regular
b) context sensitive
c) context free
d) all of the mentioned
View Answer
Answer: c
Explanation: Conversely, every context frr grammar can be converted into Chomsky Normal form and to other forms.

4. Which of the production rule can be accepted by Chomsky grammar?
a) A->BC
b) A->a
c) S->e
d) All of the mentioned
View Answer
Answer: d
Explanation: in CNF, the production rules are of the form:
A->BC
A-> a
S->e

5. Given grammar G:
(1)S->AS
(2)S->AAS
(3)A->SA
(4)A->aa
Which of the following productions denies the format of Chomsky Normal Form?
a) 2,4
b) 1,3
c) 1, 2, 3, 4
d) 2, 3, 4
View Answer
Answer: a
Explanation: The correct format: A->BC, A->a, X->e.

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6. Which of the following grammars are in Chomsky Normal Form:
a) S->AB|BC|CD, A->0, B->1, C->2, D->3
b) S->AB, S->BCA|0|1|2|3
c) S->ABa, A->aab, B->Ac
d) All of the mentioned
View Answer
Answer: a
Explanation: We can eliminate the options on the basis of the format we are aware of: A->BC, B->b and so on.

7. With reference to the process of conversion of a context free grammar to CNF, the number of variables to be introduced for the terminals are:
S->ABa
A->aab
B->Ac

a) 3
b) 4
c) 2
d) 5
View Answer
Answer: a
Explanation: According to the number of terminals present in the grammar, we need the corresponding that number of terminal variables while conversion.

8. In which of the following, does the CNF conversion find its use?
a) CYK Algorithm
b) Bottom up parsing
c) Preprocessing step in some algorithms
d) All of the mentioned
View Answer
Answer: d
Explanation: Besides the theoretical significance of CNF, it conversion scheme is helpful in algorithms as a preprocessing step, CYK algorithms and the bottom up parsing of context free grammars.

9. Let G be a grammar. When the production in G satisfy certain restrictions, then G is said to be in _____
a) restricted form
b) parsed form
c) normal form
d) all of the mentioned
View Answer
Answer: c
Explanation: When the production in G satisfy certain restrictions, then G is said to be in ‘normal form’.

10. Let G be a grammar: S->AB|e, A->a, B->b
Is the given grammar in CNF?
a) Yes
b) No
View Answer
Answer: a
Explanation: e is allowed in CNF only if the starting variable does not occur on the right hand side of the derivation.

1. Which of the following is called Bar-Hillel lemma?
a) Pumping lemma for regular language
b) Pumping lemma for context free languages
c) Pumping lemma for context sensitive languages
d) None of the mentioned
View Answer
Answer: b
Explanation: In automata theory, the pumping lemma for context free languages, also kmown as the Bar-Hillel lemma, represents a property of all context free languages.

2. Which of the expressions correctly is an requirement of the pumping lemma for the context free languages?
a) uv^nwx^ny
b) $uv^nw^nx^ny$
c) $uv^{2n}wx^{2n}y$
d) All of the mentioned
View Answer
Answer: b
Explanation: Let L be a CFL. Then there is an integer n so that for any u that belong to language L satisfying |t| >=n, there are strings u, v, w, x, y and z satisfying
t=uvwxy
|vx|>0
|vwx|<=n For any m>=0, $uv^nwx^ny \in L$

3.Let L be a CFL. Then there is an integer n so that for any u that belong to language L satisfying
|t|>=n, there are strings u, v, w, x, y and z satisfying
t=uvwxy.
Let p be the number of variables in CNF form of the context free grammar. The value of n in terms of p is
a) 2p
b) 2p
c) 2p+1
d) p^2
View Answer
Answer: c
Explanation: This inequation has been derived from derivation tree for t which must have height at least p+2(It has more than 2^p leaf nodes, and therefore its height is >p+1).

4. Which of the following gives a positive result to the pumping lemma restrictions and requirements?
a) $\{a^ib^ic^i | i>=0\}$
b) $\{0^i1^i | i>=0\}$
c) {ss | s∈{a,b}*}
d) None of the mentioned
View Answer
Answer: b
Explanation: A positive result to the pumping lemma shows that the language is a CFL and ist contradiction or negative result shows that the given language is not a Context Free language.

5. Using pumping lemma, which of the following cannot be proved as 'not a CFL'?
a) $\{a^ib^ic^i | i>=0\}$
b) {ss | s∈{a,b}*}
c) The set legal C programs
d) None of the mentioned
View Answer
Answer: d
Explanation: There are few rules in C that are context dependent. For example, declaration of a variable before it can be used.

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6. State true or false:
Statement: We cannot use Ogden's lemma when pumping lemma fails.
a) true
b) false
View Answer
Answer: b
Explanation: Although the pumping lemma provides some information about v and x that are pumped, it says little about the location of these substrings in the string t. It can be used whenever the pumping lemma fails. Example: $\{a^pb^qc^rd^s | p=0$ or $q=r=s\}$, etc.

7. Which of the following cannot be filled in the blank below?
Statement: There are CFLs L1 nad L2 so that _____is not a CFL.
a) L1∩L2
b) L1'
c) L1*
d) None of the mentioned
View Answer
Answer: c
Explanation: A set of context free language is closed under the following operations:

a) Union
b) Concatenation
c) Kleene

8. The pumping lemma is often used to prove that a language is:
a) Context free
b) Not context free
c) Regular
d) None of the mentioned
View Answer
Answer: b
Explanation: The pumping lemma is often used to prove that a given language L is non-context-free, by showing that arbitrarily long strings s are in L that cannot be “pumped” without producing strings outside L.

9. What is the pumping length of string of length x?
a) x+1
b) x
c) x-1
d) x2
View Answer
Answer: a
Explanation: There exists a property of all strings in the language that are of length p, where p is the constant-called the pumping length .For a finite language L, p is equal to the maximum string length in L plus 1.

10. Which of the following does not obey pumping lemma for context free languages ?
a) Finite languages
b) Context free languages
c) Unrestricted languages
d) None of the mentioned
View Answer
Answer: c
Explanation: Finite languages (which are regular hence context free) obey pumping lemma where as unrestricted languages like recursive languages do not obey pumping lemma for context free languages.

1. The context free languages are closed under:
a) Intersection
b) Complement
c) Kleene

d) None of the mentioned
View Answer
Answer: c
Explanation: Context free languages are closed under the following operation: union, kleene and concatenation. For regular languages, we can add intersection and complement to the list.

2. Given Grammar G1:
S->aSb
S->e
Grammar G2:
R->cRd
R->e
If L(G)=L(G1) U L(G2), the number of productions the new starting variable would have:
a) 2
b) 3
c) 4
d) 1
View Answer
Answer: a
Explanation:
T->S|R
S->aSb
S->e
R->cRd
R->e

3. Context free languages are not closed under:
a) Intersection
b) Intersection with Regular Language
c) Complement
d) All of the mentioned
View Answer
Answer: d
Explanation: It is a theorem which states that, Context free languages are not closed under operations like intersection and complement.

4. Which of the following is incorrect?
There exists algorithms to decide if:
a) String w is in CFL L

b) CFL L is empty
c) CFL L is infinite
d) All of the mentioned
View Answer
Answer: d
Explanation: These properties are termed as decision properties of a CFL and include a set of problems like infiniteness problem, emptiness problem and membership problem.

5. If the start symbol is one of those symbols which produce no terminal through any sequence, the CFL is said to be
a) nullable
b) empty
c) eliminated
d) none of the mentioned
View Answer
Answer: b
Explanation: In the process of removing useless symbols, if the starting symbol is also a part, the CFL can be then termed as empty; otherwise not.

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6. Using the pumping constant n, If there is a string in the language of length between _____ and ____ then the language is infite else not.
a) n, 2n-1
b) 2n, n
c) n+1, 3n+6
d) 0, n+1
View Answer
Answer: a
Explanation: If there is a string in the language of length between n and 2n-1 then the language is infite else not. The idea is essentially the same for regular languages.

7. Which of the following is/are CFL not closed under?
a) Reverse
b) Homomorphism
c) Inverse Homomorphism
d) All of the mentioned
View Answer
Answer: d
Explanation: CFL is closed under union, kleene and concatenation along with the properties reversal,homomorphism and inverse homomorphism but not difference and intersection.

8. If L1 and L2 are context free languages, L1-L2 are context free:
a) always
b) sometimes
c) never
d) none of the mentioned
View Answer
Answer: c
Explanation: Context free languages are not closed under difference, intersection and complement operations.

9. A_____ is context free grammar with atmost one non terminal in the right handside of the production.
a) linear grammar
b) linear bounded grammar
c) regular grammar
d) none of the mentioned
View Answer
Answer: a
Explanation: A simple linear grammar is G with N = {S}, Σ = {a, b}, P with start symbol S and rules
S → aSb
S → ε

10. There is a linear grammar that generates a context free grammar
a) always
b) never
c) sometimes
d) none of the mentioned
View Answer
Answer: c
Explanation: Linear grammar is a subset of context free grammar which has atmost one non terminal symbol in the right hand side of the production.Thus, there exists some languages which are generated by Linear grammars.

1. The following format of grammatical notation is accepted by which of the following:
AB->CD
A->BC or
A->B or

A->a
where A, B, C, D are non terminal symbols and a is a terminal symbol.
a) Greibach Normal Form
b) Chomsky Nrmal Form
c) Kuroda Normal Form
d) None of the mentioned
View Answer
Answer: c
Explanation: Linearly Bounded grammar or Kuroda Normal Form allows the following format of grammatical analysis:
AB->CD
A->BC or
A->B or
A->a

2. Every Kuroda Normal form grammar generates _____
a) Context free grammar
b) Context sensitive grammar
c) Unrestricted grammar
d) None of the mentioned
View Answer
Answer: b
Explanation: Every context sensitive grammar which does not produce an empty string can be generated by a grammar in Kuroda Normal form.

3. Which of the following can generate Unrestricted grammars?
a) Pentonnen Normal form
b) Floyd Normal form
c) Greibach Normal form
d) None of the mentioned
View Answer
Answer: a
Explanation: Pentonnen Normal form(for Unrestricted grammars) is a special case where there is a slight modification in the format of Kuroda Normal form.
AB->AD
A->BC
A->a

4. Given a grammar in GNF and a derivable string in the grammar with the length n, any _____will halt at depth n.

a) top-down parser
b) bottom-up parser
c) multitape turing machine
d) none of the mentioned
View Answer
Answer: a
Explanation: Given a grammar in GNF and a derivable string in the grammar with the length n, any top-down parser will halt at depth n. As the parameter 'depth' is mentioned, we will use a top-down parser. Example-LL parser.

5. Which of the following grammars is similar to Floyd Normal form?
a) Backus Naur Form
b) Kuroda Normal Form
c) Greibach Normal Form
d) Chomsky Normal Form
View Answer
Answer: a
Explanation: Donald Knuth implied a BNF" syntax in which all definitions have such a form may be said to be in "Floyd Normal Form".
A->B|C
A->BC
A->a

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6. Which among the following can parse a context free grammar?
a) top down parser
b) bottom up parser
c) CYK algorithm
d) all of the mentioned
View Answer
Answer: d
Explanation: We use certain algorithms to parse a context free grammar which include the most popular CYK algorithm which employs the concept of bottom up parsing and dynamic parsing.

7. The standard version of CYK algorithm operates only on context free grammars in the following form:
a) Greibach Normal form
b) Chomsky Normal form
c) Backus Naur form
d) All of the mentioned
View Answer
Answer: b
Explanation: It requires the presence of a context free grammar into

Chomsky Normal form to operate. However, every context free grammar can be converted into CNF for keeping the sense of grammar equivalent.

8. The _____ running time of CYK is $O(n^3 .|G|)$
where n is the length of the parse string and |G| is the size of the context free grammar G.
a) worst
b) best
c) average
d) none of the mentioned
View Answer
Answer: a
Explanation: This is the worst case running time of CYK and and this makes it one of the most efficient algorithms for recognizing general context free languages in practice.

9. Which of the following is true for Valiants algorithm?
a) an extension of CYK
b) deals with efficient multiplication algorithms
c) matrices with 0-1 entries
d) all of the mentioned
View Answer
Answer: d
Explanation: Valiants algorithm is actually an extention of CYK which even computes the same parsing table yet he showed another method can be utilized fro performing this operation.

10. Which among the following is a correct option in format for representing symbol and expression in Backus normal form?
a) <symbol> ->expression
b) <symbol>::=_expression_
c) <symbol>=<expression>
d) all of the mentioned
View Answer
Answer: b
Explanation: <symbol>::=_expression_ is the correct representation where <symbol> is a non terminal, and expression consist of one or more sequence of symbols, more sequence are separated by |, indicating a choice.

1. Which of the following is not a negative property of Context free languages?
a) Intersection

b) Complement
c) Intersection and Complement
d) None of the mentioned
View Answer
Answer: c
Explanation: Context free languages are not closed under complement and intersection. Thus, are called Negative properties.

2. The intersection of context free language and regular language is _____
a) regular language
b) context free language
c) context sensitive language
d) non of the mentioned
View Answer
Answer: b
Explanation: If a language L1 is regular and L2 is a context free language, then L1 intersection L2 will result into a context free language.

3. Which of the following is regular?
a) $a^{100}b^{100}$
b) (a+b)*-{$a^{100}b^{100}$}
c) $a^{100}b^{100}$ and (a+b)*-{$a^{100}b^{100}$}
d) None of the mentioned
View Answer
Answer: c
Explanation: As the language seems to be finite, a dfa can be constructed for the same, thus is regular.

4. Which of the following is not context free?
a) {w: nA=nB=nC}
b) {a*b*c*}
c) {$a^{100}b^{100}$}
d) All of the mentioned
View Answer
Answer: d
Explanation: {a*b*c*} and (c) are regular languages while option (a) is not context free language.

5. Which of the following can be used to prove a language is not context free?
a) Ardens theorem
b) Power Construction method
c) Regular Closure

d) None of the mentioned
View Answer
Answer: c
Explanation: We can use the properties of regular closure to prove that a language is not a context free language. Example: Intersection of context free language and regular language is a context free language. Proof by contradiction helps here.

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6. Which of the following are valid membership algorithms?
a) CYK algorithm
b) Exhaustive search parser
c) CYK algorithm and Exhaustive search parser
d) None of the mentioned
View Answer
Answer: c
Explanation: CYK algorithm is a parsing algorithm for context free grammars, which employs bottom up parsing and dynamic programming.

7. Which of the following belong to the steps to prove emptiness?
a) Remove useless variable
b) Check if a start variable S is useless
c) Remove useless variable and Check if a start variable S is useless
d) None of the mentioned
View Answer
Answer: c
Explanation: The empty-language question can be stated as: For context free grammar G find if L(G) =f?

8. Which of the following is true for CYK Algorithm?
a) Triangular Table
b) Circular Chart
c) Linked List
d) None of the mentioned
View Answer
Answer: a
Explanation: A triangular table is constructed to facilitate the solution of membership problem using bottom up parsing and dynamic programming.

9. Which of the following steps are wrong with respect to infiniteness problem?
a) Remove useless variables
b) Remove unit and epsilon production
c) Create dependency graph for variables
d) If there is a loop in the dependency graph the language is finite else

infinite
View Answer
Answer: d
Explanation: If we are able to detect a loop in the formed dependency graph, then the language in infinite.

10. State true or false:
Statement: Every context free language can be generated by a grammar which contains no useless non terminals.
a) true
b) false
View Answer
Answer: a
Explanation: At first, we detect useless symbols and discard them. Inorder to find whether a symbol is useless, just make it the starting symbol and check for emptiness.