Comprehensive-FLAT-Question-Bank

Qno	Question	Answer
1	Which language is the most restrictive? a) Context Free b) Regular c) Context Sensitive d) None	B
2	The language accepted by a Push down Automata: A) Type0 B) Type1 C) Type2 D) Type3	C
3	All the regular languages can have one or more of the following descriptions: i) DFA ii) NFA iii) e-NFA iv) Regular Expressions Which of the following are correct? A) i, ii, iv B) i, ii, iii C) i, iv D) i, ii, iii, iv	D) i, ii, iii, iv
4	Which of the following are non regular? a) The set of strings in {a,b} *with an even number of b's* *b) The set of strings in {a, b, c}* where there is no c anywhere to the left of a c) The set of strings in {0, 1}* that encode, in binary, an integer w that is a multiple of 3. Interpret the empty strings e as the number 0. d) None of the mentioned	None of the mentioned
5	Recursively enumerable languages are not closed under A) Union B) Homomorphism	C

Qno	Question	Answer
	C) Complementation D) Concatenation	
6	If all the production rules have single non - terminal symbol on the left side, the grammar defined is : a. context free grammar b. context sensitive grammar c. unrestricted grammar d. phrase grammar	A
7	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 ic CF D.both(A)and(C)	D
8	A grammar whose productions are of the form A → BC is in what normal form? (A) Chomsky normal form (B) Greibach normal form (C) Both (A) and (B) (D) Neither (A) nor (B)	A
9	Which of the technique can be used to prove that a language is non regular? a) Ardens theorem b) Pumping Lemma c) Ogden’s Lemma d) None of the mentioned	D
10	Which of the technique can be used to prove that a language is non regular? a) Ardens theorem b) Pumping Lemma c) Ogden’s Lemma d) None of the mentioned	B
11	Let N be an NFA with n states. Let k be the number of states of a minimal DFA which is equivalent to N. Which one of	D

Qno	Question	Answer
	the following is necessarily true? (A) $k \geq 2\ n$ (B) $k \geq n$ (C) $k \leq n\ 2$ (D) $k \leq 2$^n	
12	A language L is accepted by FSA if it is: A)CFL B)CSL C)Recursive D)Regular	D
13	Which of the following denotes Chomskian hiearchy? [A] REG ? CFL ? CSL ? type0 [B] CFL ? REG ? type0 ? CSL [C] CSL ? type0 ? REG ? CFL [D] CSL ? CFL ? REG ? type0	A
14	Which of the following regular expression identity is true ? a) `r(*) = r*` b) `(r*s*)* = (r+s)*` c) `(r+s)* = r* + s*` d) `r*s* = r* + s*`	B
15	Consider the following languages over the alphabet Σ = {0,1,c} $L_1 = \{0^n 1^n \mid n \geq 0\}$ $L_2 = \{wcw^r \mid w \in \{0,1\}^*\}$ $L_3 = \{ww^r \mid w \in \{0,1\}^*\}$ Here wr is the reverse of the string w. Which of these languages are deterministic Context-free languages? (A) None of the languages (B) Only L1 (C) Only L1 and L2 (D) All the three languages	C
16	Grammars that can be translated to DFAs: a. Left linear grammar b. Right linear grammar c. Generic grammar d. All of these	B
17	Which of the following statements is true? A) If a language is context free it can always be accepted by a	B

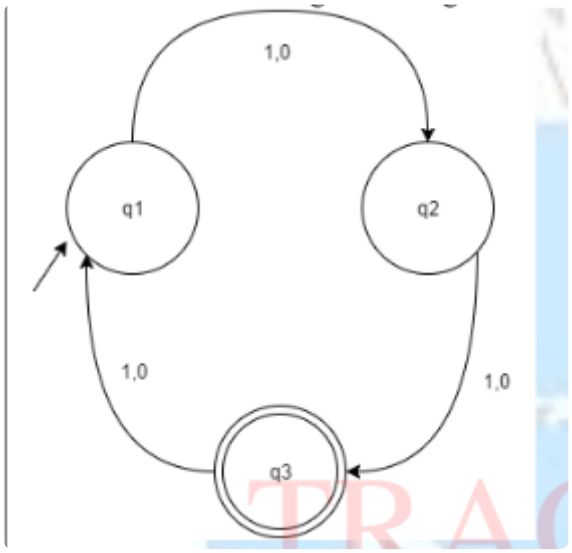
Qno	Question	Answer
	deterministic push-down automaton. B) The union of two context free language is context free C) The intersection of two context free languages is context free D) The complement of a context free language is context free	
18	An e-NFA is `_____` in representation. a) Quadruple b) Quintuple c) Triple d) None of the mentioned	B
19	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	B
20	Write the regular expression of the language L={€,ab,abab,ababab,.....} a) `(ab)*` b) `(a,b)*` c) `(a)*(b)*` d) `ab*`	A
21	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	A
22	A CFG is not closed under a) Dot operation b) Union Operation c) Concatenation d) Iteration	D
23	If L1′ and L2′ are regular languages, then L1.L2 will be a) regular b) non regular c) may be regular d) none of the mentioned	A
24	Given the following statements: S1: Every context-sensitive language L is recursive.	D

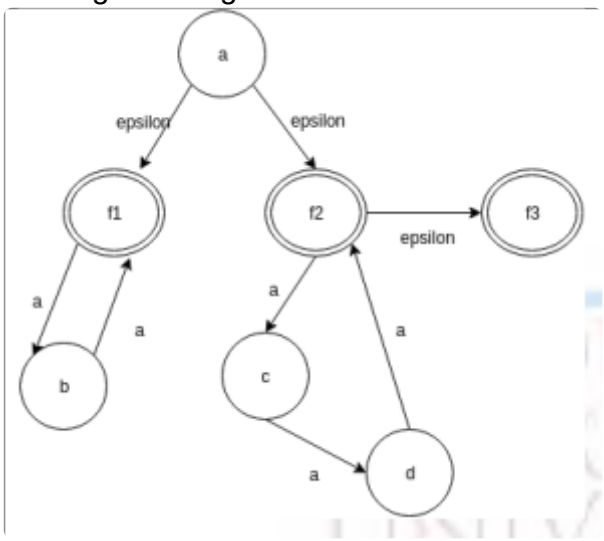
Qno	Question	Answer
	S2: There exists a recursive language that is not context sensitive. Which statement is correct? a. S1 is not correct and S2 is not correct b. S1 is not correct and S2 is correct c. S1 is correct and S2 is not correct d. S1 is correct and S2 is correct	
25	Grammars that can be translated to DFAs a. Left linear grammar b. Right linear grammar c. Generic grammar d. All of these	B
26	Which of the following are non regular? a) The set of strings in {a,b} *with an even number of b's* *b) The set of strings in {a, b, c}* where there is no c anywhere to the left of a c) The set of strings in {0, 1}* that encode, in binary, an integer w that is a multiple of 3. Interpret the empty strings e as the number 0. d) None of the mentioned	D
27	The language accepted by a Push down Automata:	Type2
28	Which of the following strings is not generated by the following grammar S-> SaSbS|e a) aabb b) abab c) aababb d) aaabb	d) aaabb
29	A pushdown automata behaves like a Turing machine when the number of auxiliary memory is A)0. B)1. C)1 or more D)2 or more	D)2 or more
30	There exists an initial state, 17 transition states, 7 final states and one dumping state, Predict the maximum number of states in its equivalent DFA?	A

Qno	Question	Answer
	a) 226 b) 224 c) 225 d) 223	
31	Given the language L = {ab, aa, baa}, which of the following strings are in L*? A) abaabaaabaa B) aaaabaaaa C) baaaaabaaaab D) baaaaabaa Choose the correct answer	1,2,4
32	Any production of CFG of the form A---->€ is a)€ production b) unit production c) removal of symbol d) zero production	A
33	The context-free languages are closed for ? A) Intersection B) Union C) Complementation D) Kleene Star	B) Union D) Kleene Star
34	There are ____ tuples in finite state machine. a) 4 b) 5 c) 6 d) unlimited	B
35	Which of the technique can be used to prove that a language is non regular? a) Ardens theorem b) Pumping Lemma c) Ogden’s Lemma d) None of the mentioned	B
36	The number of states in a turing machine is _____	infinite
37	Myphill Nerode does the following: a) Minimization of DFA b) Tells us exactly when a language is regular c) Both (a) and (b) d) None of the mentioned	Both a and b
38	Language not accepted in Linear bounded automata a)regular b)context free	D

Qno	Question	Answer
	c)context sensitive d)recursively enumerable	
40	Which one of the following problems is undecidable? (A) Deciding if a given context-free grammar is ambiguous. (B) Deciding if a given string is generated by a given context-free grammar. (C) Deciding if the language generated by a given context-free grammar is empty. (D) Deciding if the language generated by a given context-free grammar is finite.	A
41	The context free grammar given by $S \rightarrow XYX$ $X \rightarrow aX\|bX\|\lambda$ $Y \rightarrow bbb$ generates the language which is defined by regular expression: a) `(a+b)*bbb` b) `abbb(a+b)*` c) `(a+b)*(bbb)(a+b)*` d) `(a+b)(bbb)(a+b)*`	C
42	Language of finite automata is D) Type 3 A) Type 0 B) Type 1 C) Type 2 D) Type 3	C
43	The minimum number of states of the non-deterministic finite automation which accepts the language {a b a bn| n ≥ 0} ∪ {a b an|n ≥ 0} is A)3 B)4 C)5 D)6	C
44	Palindromes can’t be recognized by any FSA because [A] FSA cannot remember arbitrarily large amount of information [B] FSA cannot deterministically fix the midpoint	D

Qno	Question	Answer
	[C] Even if the mid point is known an FSA cannot find whether the second half of the string matches the first half [D] all of the above	
45	Which one of the following statement is FALSE? [A] context-free languages are closed under union [B] context-free languages are closed under concatenation [C] context-free languages are closed under intersection [D] context-free languages are closed under Kleene closure	C
46	Context free languages are not closed under (A)Intersection (B) Union (C)Reversal (D)Kleene closure	A
47	Consider the following problems. L(G) denotes the language generated by a grammar G. L(M) denotes the language accepted by a machine M. (I) For an unrestricted grammar G and a string w, whether w ∈ L(G) (II) Given a Turing machine M, whether L(M) is regular (III) Given two grammars G1 and G2, whether L(G1) = L(G2) (IV) Given an NFA N, whether there is a deterministic PDA P such that N and P accept the same language. Which one of the following statements is correct? (A) Only I and II are undecidable (B) Only III is undecidable (C) Only II and IV are undecidable (D) Only I, II and III are undecidable	D
48	Ambigous grammar is defined a grammar having more than one derivation tree 1.True 2.False	True
49	Which of the following pairs have different expressive power? a. Single-tape-turing machine and multi-dimensional turing machine b. Multi-tape turing machine and multi-dimensional	C

Qno	Question	Answer
	turing machine c. Deterministic push down automata and non-deterministic pushdown automata d. Deterministic finite automata and Non-deterministic finite automata	
50	The set that can be recognized by a deterministic FSA is	These are closed under union,Kleen closure
51	The problem that is undecidable - (A) Finiteness problem for FSA's (B) Membership problem for CFG's (C) Equivalence problem for FSA's (D) Ambiguity problem for CFG's	D
52	Grammars that can be translated to DFAs: A.Left linear grammar B.Right linear grammar C.Generic grammar D.All of these	B
53	A Language for which no DFA exist is a _____	Non-Regular Language
54	Which of the following will the given DFA won't accept?  	ε
55	Regular expression for all strings starts with ab and ends with bba is.	`ab(a+b)*bba`
56	Which of the following options is correct? Statement 1: Initial State of NFA is Initial State of DFA. Statement 2: The final state of DFA will be every combination of final state of NFA.	Statement 1 is true and Statement 2 is true

Qno	Question	Answer
57	The number of elements present in the e-closure(f2) in the given diagram: 	2
58	The language accepted by Push down Automaton:	Context free language
59	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?	2,4
60	Which of the problems are unsolvable?	Halting problem & Boolean Satisfiability problem
61	Given Grammar: S->A, A->aA, A->e, B->bA Which among the following productions are Useless productions?	B->bA
62	The production of the form A->B , where A and B are non terminals is called	Unit production
63	Which of the following is not a component of a formal language?	Compiler
64	Which type of automation recognizes regular languages?	Finite Automation
65	The Chomsky hierarchy classifies formal languages into how many levels?	4

Qno	Question	Answer
66	Which type of automation has both finite control unit and unbounded tape	Turing Machine
67	The language accepted by a turing machine with a halting state is known as	Recursive enumerable language
68	Which of the following is a non deterministic automation	Pushdown automation
69	Which of the following is true about regular languages?	They can be recognized by finite automation
70	The chomsky normal form is a way to represent a context free grammar where	All production rules have atmost two non terminals on the right hand side
71	Which of the following is a regular expression for the language of all strings over {a,b} that contain at least one "a"?	(a+b)a(a+b)
72	Which type of automation is used in lexical analysis for tokenizing source code	Finite automation
73	A non Kleene star operation accepts the following string of infinite length over set A = |{0,1}| a) 01,0011,010101 b) 0011,11001100 c)ε,0011,11001100 d)ε,0011,11001100	C
74	Which of the following is not part of 5 type finite automata? a) Input Alphabet b) Transition function c) Initial state d) Output alphabet	D
75	Which of the following conversion is not possible (algorithmically)? a) Regular grammar to CFG b) Non deterministic FA to Deterministic FA c) Non Deterministic PDA to Deterministic PDA d) Non Deterministic TM to Deterministic TM	C
76	Regular expression for all strings start with ab and ends with bba is a) `aba^*b^*bba` b) `ab(ab)^*bba`	C

Qno	Question	Answer
	c) `ab(a+b)^*bba` d) All of the mentioned	
77	Pumping lemma is generally used for proving that a) Given grammar is regular b) Given Grammar is not regular c) Whether two given regular expression are equivalent or not d) None of these	B
78	Consider the regular language `L = (111+11111) *` The minimum number of states in any DFA accepting this language is	3
79	Suppose a regular language L is closed under the operation halving then the result would be a) 1/4 L will be regular b) 1/2 L will be regular c) 1/8 L will be regular d) All of the mentioned	B
80	Which among the following cannot be accepted by a regular grammar? a) L is a set of numbers divisible by 2 b) L is a set of binary complement c) L is a set of string with odd number of 0 d) L is a set of 0n1n	D
81	If L1 and L2 are context free languages, which of the following is context free? a) `L1*` b) `L2UL1` c) `L1.L2` d) All of the mentioned	D
82	Consider a grammar with the following productions S-> aab | bac | aB S -> aS | S -> abb | ab S -> bdb The above grammar is a) Context Free b) Regular c) Context sensitive d) Type 0	A