***Department: Computer Science & Engineering***

***SUBJECT: AUTOMATA THEORY***

***Programme: B.Tech***

MCQs Questions answers with solution.

1) Which of the following delays the transmission of signal along the wire by one step (clock pulse)?

(A). NAND box (NOT AND)

(B). AND box

(C). OR box

(D). DELAY box

(E). None of these

Answer: (D). DELAY box

2) For the given input, which of the followings provides the Boolean OR output?

(A). NAND box (NOT AND)

(B). DELAY box

(C). AND box

(D). OR box

(E). None of these

Answer: (D). OR box

3) For a given input, which of the followings provides the compliment of Boolean AND output?

(A). DELAY box

(B). OR box

(C). NAND box (NOT AND)

(D). AND box

(E). None of these

Answer: (C). NAND box (NOT AND)

4) If L1 and L2 are regular languages then which of the followings is/are also regular language(s)?

(A). L1 + L2

(B). L1L2

(C). L1

(D). All of above

Answer: (D). All of above

5) If L1 and L2 are regular languages, then these can be expressed by the corresponding FAs.

True

False

Answer: True

6) Regular Expression for the language of words containing even number of a’s is?

(A). (a+b)aba(a+b)

(B). a+bbaabaa

(C). (a+b)ab(a+b)

(D). (b+aba)

Answer: (D). (b+aba)

7) The language that can be expressed by any regular expression is called a regular language.

True

False

Answer: True

8) Which of the following languages are the examples of non-regular languages?

(A). PALINDROME and EVEN-EVEN

(B). EVEN-EVEN and PRIME

(C). PALINDROME and PRIME

(D). FACTORIAL and SQURE

Answer: (C). PALINDROME and PRIME

9) Is it true that Languages are proved to be regular or no- regular using pumping lemma?

True

False

Answer: True

10) Which of the followings is the obviously infinite language?

(A). EQUAL-EQUAL

(B). EVEN-EVEN

(C). FACTORIAL

(D). PALINDROME

Answer: (D). PALINDROME

11) Select the most nearest to the Myhill Nerode theorem.

(A). L partitions Σinto distinct classes.

(B). If L is regular then, L generates finite number of classes.

(C). If L generates finite number of classes then L is regular.

(D). All of above

(E). None of above

Answer: (D). All of above

12) If we want to describe the complement of a language, then it is very important to describe the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of that language over which the language is defined.

(A). Regular Expression

(B). String

(C). Word

(D). Alphabet

Answer: (D). Alphabet

13) “CFG” stands for \_\_\_\_\_\_\_\_\_

(A). Context Free Graph

(B). Context Free Grammar

(C). Context Finite Graph

(D). Context Finite Grammar

(E). None of above

Answer: (B). Context Free Grammar

14) Which of the followings states are called the halt states?

(A). ACCEPT AND START

(B). ACCEPT and READ

(C). ACCEPT and REJECT

(D). ACCEPT AND WRITE

Answer: (C). ACCEPT and REJECT

15) The part of an PDA, where the input string is placed before it is run, is called?

(A). State

(B). Transition

(C). Input Tape

(D). Output Tape

(E). None of above

Answer: (C). Input Tape

16) In non-deterministic PDA, there are more than one out going edges from the which of the following states?

(A). READ or POP

(B). START or READ

(C). POP or REJECT

(D). PUSH or POP

(E). None of above

Answer: (A). READ or POP

17) If an effectively solvable problem has answered in yes or no, then this solution is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(A) Decision Problem

(B) Decision Method

(C) Decision Procedure

(D) Decision Making

Answer: (C) Decision Procedure

18) Which of the followings are decidable problems.

(A). The two FAs are equivalent

(B). The two regular expressions define the same language

(C). Both a and b

(D). None of given

(E). None of above

Answer: (C). Both a and b

19) Which one of the followings was the major problem in the earliest computers?

(A). To store the contents in the registers

(B). To load the contents from the registers

(C). To calculate the mathematical formula

(D). To show the mathematical formulae

(E). None of above

Answer: (D). To show the mathematical formulae

20) Regular expressions are closed under

(a) Union

(b) Intersection

(c) Kleen star

(d) none of these

(e) All of these

Answer: (e) All of these

21) Which strings are valid for Regular Expression aa(bb)\*

(A) bb, bbbb, bbbbbb,…

(B) abb, abbbb, abbbbbb,…

(C) aabb, aabbbb, aabbb,…

(D) aabb, aabbbb, aabbbb,…

Answer: (D) aabb, aabbbb, aabbbb,…

22) Regular Expression For All Strings Starts With a defined over {a,b}

(A) a(a+b)

(B) a(a+b)\*

(C) a\*

(D) a\*(a+b)\*

Answer: (B) a(a+b)\*

22) Regular Expression For All Strings Starts With ab and ends with b defined over {a,b}

(A) ab(a+b)b

(B) ab(a+b)\* b

(C) ab\* b

(D) None of these

Answer: (B) ab(a+b)\* b

23) Regular Expression For All Strings having always consecutive a’s defined over {a,b}

(A) (aa+b)

(B) aa(b)\*

(C) (aa+b)\*

(D) None of these

Answer: (C) (aa+b)\*

24) Which one is correct regarding Regular Expression?

(A) We can draw FA for each regular expression

(B) We can’t draw FA for some regular expression

(C) RE defines regular languages

(D) Both a and C

Answer: (D) Both a and C

25) The entity which generate Language is termed as:  
(a) Automata  
(b) Tokens  
(c) Strings  
***(d) Grammar***

***Ans: (D)***

26) The minimum number of productions required to produce a language consisting of palindrome strings over ∑={a,b} is  
***(a) 5***  
(b) 7  
(c) 3  
(d) 8

Answer: (a) 5

27) Which of the following statement is correct?  
(a) All context free grammar are regular grammar but not vice versa  
***(b) All Regular grammar are context free but not vice versa***

(c) Regular grammar and context free grammar are the same entity  
(d) None of the mentioned

ANS: (b)

28) Context sensitive grammar (CSL) is also called?  
(a) Length increasing grammar

(b) Non contracting Grammar

(c) Type 1 Grammar  
***(d) All of these***

ANS: (d)

29) Which of the following is  Type 3 language or Type 3 grammar?  
***(a) Regular grammar/ Regular language***

(b) Context Free Grammar / Context Free

language

(c) Context Sensitive Grammar / Context   Sensitive  language  
(d) Recursively Enumerable

Answer: (a)

30) Which of the following is  Type 2 language or Type 2 grammar?  
(a) Regular grammar/ Regular language

***(b) Context Free*** ***Grammar / Context Free language***

(c) Context Sensitive Grammar / Context Sensitive  language  
(d) Recursively Enumerable

ANS: (b)

31) Which of the following is  Type 1 language or Type 1 grammar?  
(a) Regular grammar/ Regular language

(b) Context Free Grammar / Context Free language

***(c) Context Sensitive Grammar / Context Sensitive  language***(d) Recursively Enumerable

ANS: (c)

32) Which of the following is  Type 0 language?  
(a) Regular grammar/ Regular language

(b) Context Free Grammar / Context Free language

(c) Context Sensitive Grammar / Context Sensitive  language  
***(d) Recursively Enumerable***

***ANSWER: (d)***

33) Which of the following Machine is specific for Regular grammar?  
***(a) Finite state automata***

(b) Push down automata

(c) Linear bounded automata

(d) Turing Machine with deterministic logic, unbounded infinite length of tape.

ANSWER: (a)

34) Which of the following Machine is specific for Context free grammar?  
(a) Finite state automata

***(b) Push down automata***

(c) Linear bounded automata

(d) Turing Machine

ANS: (b)

35) Which of the following Machine is specific for Context sensitive grammar?  
(a) Finite state automata

(b) Push down automata

***(c) Linear bounded automata***

(d) Turing Machine

Answer: (c)

36) Which of the following Machine is specific for Recursively enumerable languages?  
(a) Finite state automata

(b) Push down automata

(c) Linear bounded automata

***(d) Turing Machine***

***ANS: (d)***

37) A context free language is called ambiguous if there exists a  string  that can have?  
(a) only one parse tree

***(b) more than one parse tree***

(c) no parse tree

(d)  Partial parse tree

ANSWER: (b)

38) The given context free grammar generates \_\_\_\_\_\_\_\_?

X → XX | aXb | bXa | ɛ

(a) Number of a’s followed by any number of b’s

(b) Unequal number of a’s and b’s

***(c) Equal number of a’s and b’s***

(d) None of these

ANS: (c)

39) Production Rule aYb->agb belongs to which of the following languages?  
(a) Recursively Enumerable Language

(b) Context free Language  
***(c) Context Sensitive Language***(d) Regular Language

Answer: (c)

40) Which of the following language cannot be accepted by a regular expression?

(a) Language of a set of numbers divisible by 4

(b) Language of a set of binary complement

***(c) Language of a set of 0n1n***

(d) Language of a set of string with odd number of 0

ANS: (c)

41) The minimum number of productions required to produce a language consisting of palindromes as a  strings defined over ∑={0,1} is  
(a) 4  
***(b) 5***  
(c) 6  
(d) 7

ANS: (b)

42) Which of the following statement is true about regular grammar?  
(a) Regular grammar and context free  
(b) All context free grammar are regular grammar but not vice versa  
***(c) All Regular grammar are context free but not vice versa grammar are the same entity***  
(d) All of these

ANS: (c)