TOC Unit VI MCQ

1.A language L is said to be _____ if there is a turing machine M such that L(M)=L and M halts at every point.

a.Turing acceptable
b.decidable
c.undecidable
d.none of the mentioned
Answer: (b).decidable

2.Which aong the following are undecidable theories?

a.The first order theory of boolean algebra
b.The first order theory of Euclidean geomentry
c.The first order theory of hyperbolic geometry
d.The first order theory of the natural number with addition, multiplication, and equality
Answer: (d). The first order theory of the natural number with addition, multiplication, and equality

3.Rec-DFA = { | M is a DFA and M recognizes input w}.
Fill in the blank:

Rec-DFA is _____

a.Undecidable
b.Decidable
c.Non finite
d.None of the mentioned
Answer: (b). Decidable

4.Which among the following are semi decidable?

a.Empty-DFA
b.Rec-NFA
c.Infinite-DFA
d.All of the mentioned
Answer: (d).All of the mentioned

5.The language accepted by a turing machine is called _____

a.Recursive Ennumerable
b.Recursive
c.both a and b
d.None of the mentioned
Answer: (c).both a and b

6.Decidable can be taken as a synonym to:
a.recursive
b.non recursive
c.recognizable
d.none of the mentioned
Answer: (a).recursive

7.The problems which have no algorithm, regardless of whether or not they are accepted by a turing machine that fails to halts on some input are referred as:
a.Decidable
b.Undecidable
c.Computable
d.None of the mentioned
Answer: (b).Undecidable

8.An algorithm is called efficient if it runs in _____ time on a serial computer.
a.polynomial
b.non polynomial
c.logarithmic
d.none of the mentioned
Answer: (a).polynomial

9.A problem is called _____ if its has an efficient algorithm for itself.
a.tractable
b.intractable
c.computational
d.none of the mentioned
Answer: (a).tractable

10.A formal language is recursive if :
a.a total turing machine exists
b.a turing machine that halts for every input
c.turing machine rejects if the input does not belong to the language
d.all of the mentioned
Answer: (d).all of the mentioned

11.Recursive languages are also known as:
a.decidable
b.undecidable
c.sometimes decidable
d.none of the mentioned
Answer: (a).decidable

12.The class of recursive language is known as:
a.R
b.RC
c.RL
d.All of the mentioned
Answer: (a).R

13.Which of the following was not a part of Chomsky hierarchy ?
a.Context sensitive grammar
b.Unrestricted grammar
c.Recursive grammar
d.None of the mentioned
Answer: (c).Recursive grammar

14.According to the rice's theorem, If P is a non trivial property, Lp is :
a.infinite
b.decidable
c.undecidable
d.none of the mentioned
Answer: (c).undecidable

15.Which of the following is incorrect according to rice theorem?
Let S be a set of language hat is non trivial:
a.there exists a TM that recognizes the language in S
b.There exists a TM that recognizes the language not in S
c.both a and b
d.none of the mentioned
Answer: (c).both a and b

16.Which of the following set of computable functions are decidable?
a.The class of computable functions that are constant, and its complement
b.The class of indices for computable functions that are total
c.The class of indices for recursively enumerable sets that are cofinite
d.All of the mentioned
Answer: (d).All of the mentioned

17.Which of the following statements are undecidable?
For a given Turing Machine M,
a.does M halt on an empty input tape
b.does M halt for anly inputs at all?
c.is L(M) regular? Context free? Turing decidable?

d.all of the mentioned
Answer: (d).all of the mentioned

18.Post Correspondence problem is
a.decidable decision problem
b.undecidable decision problem
c.not a decision problem
d.none of the mentioned
Answer: (b).undecidable decision problem