Program: BE Computer Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code:CSC504 and Course Name: Theory of Computer Science

Time: 1 hour Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	Assume the R is a relation on a set A, aRb is partially ordered such that a and b are
Option A:	reflexive
Option B:	transitive
Option C:	symmetric
Option D:	reflexive and transitive
Q2.	∑k is defined as the set of all the strings from the alphabet of length k. What is ∑k ?
Option A:	A) power
Option B:	B) alphabet
Option C:	C) string
Option D:	D) substring
Q3.	The minimum number of states required to recognize an octal number divisible by 3 are/is
Option A:	1
Option B:	3
Option C:	5
Option D:	7
Q4.	Which of the following is a not a part of 5-tuple finite automata?
Option A:	Input alphabet
Option B:	Transition function
Option C:	Initial State
Option D:	Output Alphabet
Q5.	Given an arbitrary non-deterministic finite automaton (NFA) with N states, the maximum number of states in an equivalent minimized DFA is at least.
Option A:	N^2
Option B:	2^N
Option C:	2N
Option D:	N!
Q6.	There are _____ tuples in finite state machine
Option A:	4

Option B:	5
Option C:	6
Option D:	unlimited
Q7.	Transition function maps
Option A:	Σ * Q -> Σ
Option B:	Q * Q -> Σ
Option C:	Σ * Σ -> Q
Option D:	Q * Σ -> Q
Q8.	Regular expression for all strings which **starts with ab and ends with bba** except
Option A:	aba*b*bba
Option B:	ab(ab)*bba
Option C:	ab(a+b)*bba
Option D:	ab*ba*
Q9.	The entity which generate Language is termed as:
Option A:	Automata
Option B:	Tokens
Option C:	Grammar
Option D:	Data
Q10.	Which of the following statement is false?
Option A:	Context free language is the subset of context sensitive language
Option B:	Regular language is the subset of context sensitive language
Option C:	Recursively enumerable language is the super set of regular language
Option D:	Context sensitive language is a subset of context free language
Q11.	The Grammar can be defined as: G=(V, ∑, p, S) In the given definition, what does S represents?
Option A:	Accepting State
Option B:	Starting Variable
Option C:	Sensitive Grammar
Option D:	None of these
Q12.	Which of the following statement is correct?
Option A:	All Regular grammar are context free but not vice versa
Option B:	All context free grammar are regular grammar but not vice versa
Option C:	Regular grammar and context free grammar are the same entity
Option D:	None of the mentioned
Q13.	Push down automata accepts _____ languages
Option A:	Type 3
Option B:	Type 2
Option C:	Type 1
Option D:	Type 0

Q14.	A context free grammar is a _____
Option A:	English grammar
Option B:	Regular grammar
Option C:	Context sensitive grammar
Option D:	None of the mentioned
Q15.	A null production can be referred to as:
Option A:	String
Option B:	Symbol
Option C:	Word
Option D:	Alphabet
Q16.	The context free grammar which generates a Regular Language is termed as
Option A:	Context Regular Grammar
Option B:	Regular Grammar
Option C:	Context Sensitive Grammar
Option D:	None of the mentioned
Q17.	A turing machine operates over
Option A:	finite memory tape
Option B:	infinite memory tape
Option C:	depends on the algorithm
Option D:	none of the mentioned
Q18.	The ability for a system of instructions to simulate a Turing Machine is called _____
Option A:	Turing Completeness
Option B:	Simulation
Option C:	Turing Halting
Option D:	None of the mentioned
Q19.	Turing machine can be represented using the following tools except
Option A:	Transition graph
Option B:	Transition table
Option C:	Queue and Input tape
Option D:	Stacks
Q20.	A Turing machine that is able to simulate other Turing machines
Option A:	Nested Turing machines
Option B:	Universal Turing machine
Option C:	Counter machine
Option D:	None of the mentioned
Q21.	Which of the problems are unsolvable?
Option A:	Halting problem
Option B:	x+y using a Turing Machine

Option C:	Palindromes using PDA
Option D:	$a^n b^n$ using Palindromes
Q22.	The decision problem is the function from string to _____
Option A:	char
Option B:	int
Option C:	Boolean
Option D:	String
Q23.	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
Option A:	Turing acceptable
Option B:	decidable
Option C:	undecidable
Option D:	Recursive
Q24.	Which among the following are undecidable theories?
Option A:	The first order theory of Boolean algebra
Option B:	The first order theory of Euclidean geometry
Option C:	The first order theory of hyperbolic geometry
Option D:	The first order theory of the natural number with addition, multiplication, and equality
Q25.	Decidable can be taken as a synonym to:
Option A:	recursive
Option B:	non recursive
Option C:	recognizable
Option D:	Recursively enumerable