Program: BE Information Technology Engineering

Curriculum Scheme: R16-CBCGS

Examination: Second Year Semester IV

Course Code: SEITC405 and Course Name: Automata Theory

Time: 1hour Max. Marks: 50

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

Q1.	Transition function maps.
Option A:	Σ * Q -> Σ
Option B:	Q * Q -> Σ
Option C:	Σ * Σ -> Q
Option D:	Q * Σ -> Q
Q2.	Number of states require to accept string ends with 10.
Option A:	3
Option B:	2
Option C:	1
Option D:	Can't be represented
Q3.	Languages of a automata is
Option A:	If it is accepted by automata
Option B:	If it halts
Option C:	If automata touch final state in its life time
Option D:	All language are language of automata
Q4.	Finite automata requires minimum _______ number of stacks
Option A:	1
Option B:	0
Option C:	2
Option D:	3
Q5.	Regular expression for all strings starts with ab and ends with bba is.
Option A:	aba*b*bba
Option B:	ab(ab)*bba
Option C:	ab(a+b)*bba
Option D:	ab(abb)*bba
Q6.	The basic limitation of finite automata is that
Option A:	It can't remember arbitrary large amount of information.
Option B:	It sometimes recognizes grammar that are not regular.

Option C:	It sometimes fails to recognize regular grammar
Option D:	It can sometime recognize ambiguous grammar.
Q7.	A DPDA is a PDA in which:
Option A:	No state p has two outgoing transitions
Option B:	More than one state can have two or more outgoing transitions
Option C:	Atleast one state has more than one transitions
Option D:	Has more expressive power than a NPDA
Q8.	If the PDA does not stop on an accepting state and the stack is not empty, the string is:
Option A:	rejected
Option B:	goes into loop forever
Option C:	Accepted
Option D:	Partially accepted
Q9.	Which of the following assertion is false?
Option A:	If L is a language accepted by PDA1 by final state, there exist a PDA2 that accepts L by empty stack i.e. L=L(PDA1)=L(PDA2)
Option B:	If L is a CFL then there exists a push down automata P accepting CF; ; by empty stack i.e. L=M(P)
Option C:	Let L is a language accepted by PDA1 then there exist a CFG X such that L(X)=M(P)
Option D:	The expressive power of NPDA is same as DPDA
Q10.	A push down automaton employs _________ data structure.
Option A:	Queue
Option B:	Linked List
Option C:	Hash Table
Option D:	Stack
Q11.	Push down automata accepts __________ languages.
Option A:	Type 3
Option B:	Type 2
Option C:	Type 1
Option D:	Type 0
Q12.	S -> aSa|bSb|a|b; The language generated by the above grammar over the alphabet {a,b} is the set of
Option A:	All palindromes
Option B:	All odd length palindromes.
Option C:	Strings that begin and end with the same symbol
Option D:	All even length palindromes
Q13.	Consider the CFG with {S,A,B) as the non-terminal alphabet, {a,b) as the terminal alphabet, S as the start symbol and the following set of production rules

	S --> aB S --> bA B --> b A --> a B --> bS A --> aS B --> aBB A --> bAA Which of the following strings is generated by the grammar?
Option A:	aaaabb
Option B:	aabbbb
Option C:	aabbab
Option D:	abbbba
Q14.	Context free languages are closed under
Option A:	Union, Intersection
Option B:	Union, Kleene closure
Option C:	Intersection, Complement
Option D:	Complement, Kleene closure
Q15.	Consider the following statements about the context free grammar G = {S → SS, S → ab, S → ba, S → E} I. G is ambiguous II. G produces all strings with equal number of a's and b's III. G can be accepted by a deterministic PDA. Which combination below expresses all the true statements about G?
Option A:	I and III only
Option B:	I only
Option C:	II and III only
Option D:	I,II and III
Q16.	The language recognized by Turing machine is:
Option A:	Context free language
Option B:	Context sensitive language
Option C:	Recursively enumerable language
Option D:	Regular language
Q17.	Turing Machine can update symbols on its tape, whereas the FA cannot update symbols on tape.
Option A:	True
Option B:	False
Option C:	Can't say
Option D:	May be
Q18.	Let L = {W ∈ (0, 1) * | W has even number of 1s}, i.e., L is the set of all bit strings with even number of 1's. Which one of the regular expressions below represents L?
Option A:	(0* 10* 1)*
Option B:	0 * (10* 10*)*

Option C:	0 * (10 *1)* 0*
Option D:	0 * 1(10 * 1) * 10 *
Q19.	Which of the following is true?.
Option A:	Every subset of a regular set is regular
Option B:	Every finite subset of non-regular set is regular
Option C:	The union of two non regular set is not regular
Option D:	Infinite union of finite set is regular
Q20.	Halting state of Turing machine are:
Option A:	Start and stop
Option B:	Accept and reject
Option C:	Start and reject
Option D:	Reject and allow
Q21.	Which of the following is true for the language: $\{a^p \mid p \text{ is a prime}\}$
Option A:	It is regular but not context-free
Option B:	It is neither regular nor context-free, but accepted by a Turing machine
Option C:	It is not accepted by a Turing Machine
Option D:	It is context-free but not regular
Q22.	Which of the following conversion is not possible (algorithmically)?
Option A:	Regular grammar to context-free grammar
Option B:	Non-deterministic pushdown automata to deterministic pushdown automata
Option C:	Non-deterministic finite state automata to deterministic finite state automata
Option D:	Non deterministic Turing machine to deterministic Turing machine
Q23.	A grammar G = (V, ∑, S, P) in which V represents
Option A:	Set of Nonterminal
Option B:	Start symbol
Option C:	Set of terminals
Option D:	Production
Q24.	The minimum number of productions required to produce a language consisting of palindrome strings (even and odd) over ∑={a,b} is
Option A:	3
Option B:	5
Option C:	7
Option D:	2
Q25.	The language of {a, b} ends in a
Option A:	S→aS | bS
Option B:	S→aS | bS |b
Option C:	S→aS | bS |S
Option D:	S→aS | bS |a