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 .

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| Q1.  | There are how many tuples in finite state machine. |
| Option A: | 4 |
| Option B: | 5 |
| Option C: | 6 |
| Option D:  | 7 |
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| Q2. | For which of the following applications regular expressions can be used? |
| Option A: | Traffic Light |
| Option B: | Developing string |
| Option C: | Simulating sequential circuits |
| Option D: | Designing computers |
|  |  |
| Q3. | At what phase of compiler grammar of the programming is checked? |
| Option A: | Code generation |
| Option B: | Syntax Analysis |
| Option C: | Code Optimization |
| Option D: | Semantic Analysis |
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| Q4. | A pushdown automaton is a way to implement: |
| Option A: | Regular grammar |
| Option B: | Context-sensitive grammar |
| Option C: | Context-free grammar |
| Option D: | Unrestricted grammar |
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| Q5. | Who invented the Turing machine? |
| Option A: | Alan Turing |
| Option B: | Mathew Turing |
| Option C: | Smith Turing |
| Option D:  | John Hayes Turing |
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| Q6. | Halting Problem is |
| Option A: | Decidable problem. |
| Option B: | Complex problem. |
| Option C: | An Undecidable Problem. |
| Option D:  | Simple problem. |
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| Q7.  | Transition function of DFA maps. |
| Option A: | Σ \* Q -> Σ |
| Option B: | Q \* Q -> Σ |
| Option C: | Σ \* Σ -> Q |
| Option D:  | Q \* Σ -> Q |
|  |  |
| Q8.  | 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 does everything |
|  |  |
| Q9. | Regular Expression denote precisely what of Regular Language. |
| Option A: | Class |
| Option B: | Power Set |
| Option C: | Super Set |
| Option D:  | Subset |
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| Q10.  | While applying Pumping lemma over a language, we consider a string w that belong to L and fragment it into how many parts. |
| Option A: | 2 |
| Option B: | 5 |
| Option C: | 3 |
| Option D:  | 6 |
|  |  |
| Q11.  | Which of the production rule can be accepted by Chomsky grammar? |
| Option A: | A->CD |
| Option B: | A->aB |
| Option C: | A->Ba |
| Option D:  | A->Dd |
|  |  |
| Q12.  | In a parse tree leaf node contains |
| Option A: | Start Symbol |
| Option B: | Production rules |
| Option C: | Non terminals |
| Option D: | Terminals |
|  |  |
| Q13. | Which of the following is unit Production |
| Option A: | A->Ca |
| Option B: | A->Є |
| Option C: | A->B |
| Option D:  | A->AB |
|  |  |
| Q14.  | A Turing Machine with several tapes in known as: |
| Option A: | Multi-tape turing machine |
| Option B: | Poly-tape turing maching |
| Option C: | Universal turing machine |
| Option D:  | Multi Purpose Turing Machine |
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| Q15. | According to Chomsky hierarchy, which of the following is recognized by Recursively Enumerable language? |
| Option A: | Type 3 |
| Option B: | Type 2 |
| Option C: | Type 1 |
| Option D:  | Type 0 |
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| Q16.  | In one move a turing machine will: a) Change a stateb) Write a tape symbol in the cell scannedc) Move the tape head left or right |
| Option A: | Both (a) and (b) |
| Option B: | Both (c) and (b) |
| Option C: | Only a |
| Option D:  | All (a), (b) and (c) |
|  |  |
| Q17. | 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 |
|  |  |
| Q18. | Moore machine has \_\_\_\_\_ tuples |
| Option A: | 5 |
| Option B: | 6 |
| Option C: | 7 |
| Option D:  | 8 |
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| Q19.  | In mealy machine, the O/P depends upon? |
| Option A: | State |
| Option B: | Previous State |
| Option C: | State and Input |
| Option D:  | Only Input |
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| Q20. | In this problem we have N number of Dominos (tiles). The aim is to arrange tiles in such order that string made by Numerators is same as string made by Denominators. |
| Option A: | Looping Problem |
| Option B: | Post Correspondence Problem |
| Option C: | Correspondence Problem |
| Option D: | Halting Problem |
|  |  |
| Q21. | If T1 and T2 are two turing machines. The composite can be represented using the expression: |
| Option A: | T1T2 |
| Option B: | T1 U T2 |
| Option C: | T1 X T2 |
| Option D:  | T1\* |
|  |  |
| Q22.  | The "turnstile" notation is used for connecting pairs of ID's that represent one or many moves of a PDA. The process of transition is denoted by the turnstile symbol: |
| Option A: | "⊢" |
| Option B: | "|" |
| Option C: | "\*" |
| Option D:  | "--" |
|  |  |
| Q23. | Which of the following grammar is unambiguous? |
| Option A: | S-> aS |Sa| Є |
| Option B: | E-> E +E | E\*E| id |
| Option C: | A -> AA | (A) | a |
| Option D:  | S -> AA ; A -> aA ; A -> b |
|  |  |
| Q24.  | Regular expression a / b denotes the set |
| Option A: | {a} |
| Option B: | {∈pilson, a, b} |
| Option C: | {a, b} |
| Option D:  | {ab} |
|  |  |
| Q25. | How many DFA’s exits with two states over input alphabet {0,1} ? |
| Option A: | 16 |
| Option B: | 26 |
| Option C: | 32 |
| Option D:  | 64 |