Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech.(CSE) (2012 to 2017) (Sem.–7)

THEORY OF COMPUTATION

Subject Code : BTCS-702

M.Code : 71894

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt ANY TWO questions.**

SECTION-A

Answer Briefly:

1. Define alphabets in Theory of Computation.
2. Define Non Deterministic Finite Automata.
3. What is a transition table?
4. Discuss Regular Expression.
5. State pumping lemma for regular languages.
6. Write short note on decidability.
7. What is left most derivation?
8. Write properties of LR(k) grammars.
9. Compare deterministic and non deterministic versions.
10. Define the language of Turing machine.

SECTION-B

11. Define the rule for construction of CFG from given PDA.

12. What are the additional features of PDA compared with NFA?

13. Verify whether that the following context free grammar is ambiguous or not :

    $S \rightarrow 1A0S$

    $S \rightarrow 1A0S1S$

    $A \rightarrow 1$

    $S \rightarrow 0$

14. Give pushdown automata that recognize the following languages :

    $B = \{w \in \{0, 1\}^* \mid w = w^R$ and the length of w is odd$\}$

15. Describe the recursively Enumerable Language with example?

SECTION-C

16. Write the steps to convert context free grammar into regular expression by taking suitable example?

17. Explain the extended transition function for NFA, DFA and $\in$-NFA. Give the regular expressions for set of all strings that begin with 110?.

18. Write short note on following :

    a) Rules for the conversion of Grammars to PDA

    b) Parsing techniques

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.