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

Total No. of Questions : 18

B.Tech (Information Technology) (Sem.–7)

THEORY OF COMPUTATION

Subject Code : BTIT-904

M.Code : 71983

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS 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

Write briefly :

1. $L \subseteq \Sigma^*$, Justify this formal language expression.
2. Define the term 'Automation'.
3. What is acceptability of a string by Finite Automation?
4. What is left recursion?
5. What is decidability?
6. State Arden's theorem.
7. Write rules for writing CNF grammar.
8. State pumping lemma for CFG.
9. What are recursively enumerable languages?
10. What is meant by halting problem in TM?

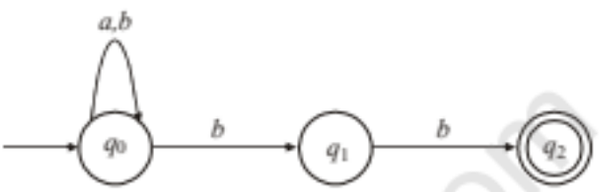
SECTION-B

11. Explain Chomsky classification of Grammars with help of examples of each.

12. What do you mean by parsing? How left most and right most derivation helps to find out the ambiguity in a grammar?

13. Explain Chomsky normal form of CFG with the help of example.

14. Convert the following NDFA to DFA :



15. Find out whether the language $L = \{x^n y^n z^n \mid n \geq 1\}$ is context free or not.

SECTION-C

16. What is a context free grammar? Explain closure properties of Context free grammar.

17. What are Turing machines? Explain different ways by which we can represent the Turing machines.

18. Write a short note on :

    a. Recursively Enumerable Languages.

    b. LR(K) Grammars

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.