Roll No. ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚ **Total No. of Pages : 02**

Total No. of Questions : 09

B.Tech.(IT) (2011 Onwards Elective-II) (Sem.–7,8)
THEORY OF COMPUTATION
Subject Code : BTIT-904
Paper ID : [A3051]

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 has to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.**

SECTION-A

1. **Write briefly :**

   a. List some applications of Theory of computation.

   b. What is a derivation tree and its yield?

   c. What is the ambiguity in a grammar?

   d. Write differences between NFA and DFA.

   e. Define regular expression.

   f. What is meant by halting problem?

   g. Acceptability of a string by FA.

   h. Give definition of CNF.

   i. How we can formally define a DFA?

   j. What do you mean by instantaneous description of a Turing machine?

SECTION-B

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

3. Explain the procedure to convert the NDFA to DFA with the help of a example.

4. Explain about Pushdown automation and why do we need it.

5. Explain Chomsky hierarchy of grammars.

6. What is the significance of using pumping lemma in context free languages with the help of example?

SECTION-C

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

8. What is a context free grammar and explain closure properties of Context free grammar?

9. Write a short note on :

a. LR(K) Grammars

b. Recursively enumerable language

c. Bottom up parsing

d. Regular Grammar.