Exam.Code:0923
Sub. Code: 6884

1129

B. E. (Information Technology)
Fifth Semester
ITE-546: Theory of Computation

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) How many DFAs exist with two states over input alphabet {0,1}
b) What is a deterministic finite automaton?
c) What is the basic limitation of finite automata
d) When are two finite-automata said to be equivalent to each other?
e) A minimum state deterministic finite automaton accepting the language L={w | w ε {0,1} *, number of 0s and 1s in w are divisible by 3 and 5, respectively}, has how many states?
f) State the Arden's theorem
g) What is a context free language?
h) What is meant by bottom up parsing?
i) Define recursive enumerable language.
j) What is a Moore machine? (10X1)

UNIT – I

II. II What is a finite state machine? Discuss equivalence between two FSMs. (10)

III. Discuss how non regular languages can be identified using pumping lemma. (10)

IV. Discuss NDFA and DFA properties. How can a NDFA be converted to a DFA? (10)

UNIT – II

V. a) What is a CFG? How can a given CFG be simplified?

b) State the various properties of a CFL. (2x5)

VI. What is pushdown automata? Discuss acceptance of PDA and its relation with CFL. (10)

VII. Write short notes on:-

a) Undecidability

b) Greibach Normal Form (5,5)

x-x-x