FORMAL LANGUAGES AND AUTOMATA THEORY

Written by Administrator
Sunday, 08 November 2009 07:18 -

Subject   Code

:

| | **06CS56** | |

IA   Marks

:

25

No. of Lecture Hrs./ Week

:

04

Exam Hours

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:

03

Total No. of Lecture Hrs.

:

52

Exam Marks

:

100

PART - A

UNIT - 1

INTRODUCTION TO FINITE AUTOMATA: Introduction to Finite Automata; The central concepts of Automata theory; Deterministic finite automata; Nondeterministic finite automata.

 7 Hours

UNIT - 2

FINITE AUTOMATA, REGULAR EXPRESSIONS: An application of finite automata; Finite automata with Epsilon-transitions; Regular expressions; Finite Automata and Regular Expressions;

Applications

of Regular Expressions.

7 Hours

UNIT - 3

REGULAR LANGUAGES, PROPERTIES OF REGULAR LANGUAGES: Regular languages; Proving languages not to be regular languages; Closure properties of regular languages;

Decision properties of regular languages; Equivalence and minimization of automata.

　　　　

　　

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UNIT - 4

CONTEXT-FREE GRAMMARS AND LANGUAGES: Context –free grammars; Parse trees; Applications; Ambiguity in grammars and Languages.

6 Hours

PART - B

UNIT - 5

PUSHDOWN AUTOMATA: Definition of the Pushdown automata; The languages of a PDA;

Equivalence of   PDA's and CFG's; Deterministic Pushdown
Automata.

7 Hours

UNIT - 6

Properties of Context-Free Languages: Normal forms for CFGs; The pumping lemma for
CFGs; Closure properties of CFL   口口口口口口口口口口口口口口口
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6 Hours

UNIT - 7

Introduction To Turing Machine: Problems that Computers cannot solve; The turning
machine;   Programming techniques for Turning Machines;
Extensions to the basic Turning Machines; Turing Machine and Computers.

7 Hours

UNIT - 8

UNDECIDABILITY: A Language that is not recursively enumerable; An Undecidable problem that is RE;   Post's Correspondence problem; Other undecidable problems.   □□ □□□□□□□□□□□□□□□□□□□   □□□□□□□□□□□□□□□□□□□ □□

□□□□ **6 Hours**

TEXT BOOK:

1.   **Introduction to Automata Theory, Languages and Computation** – John E.. Hopcroft, Rajeev Motwani, Jeffrey D.Ullman:, 3
rd
Edition, Pearson education, 2007.

REFERENCE BOOKS:

1. **Fundamentals   of the Theory of Computation: Principles and Practice** – Raymond Greenlaw, H.James Hoove, Morgan Kaufmann, 1998.

2. **Introduction   to Languages and Automata Theory** – John C Martin, 3rd   Edition, Tata McGraw-Hill, 2007.

3. **Introduction   to Computer Theory** – Daniel I.A. Cohen, 2nd Edition, John   Wiley & Sons, 2004.
4. **An   Introduction to the Theory of Computer Science, Languages and Machines** – Thomas A.   Sudkamp, 3

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Edition, Pearson Education, 2006.