

22642

M.Tech. 1st Semester (CSE) CBCB Scheme  
Examination, December-2018  
MATHEMATICAL FOUNDATION OF COMPUTER  
SCIENCE

Paper- MTCSE 21C5

*Time allowed : 3 hours]*

*[Maximum marks : 100*

*Note: Attempt five questions in all selecting one from each unit. Question No. 1 is Compulsory.*

1. Explain the following: 20
  - (i) NFA
  - (ii) PDA
  - (iii) Turing machine
  - (iv) Regular expression

**Unit-I**

2. Give a complete description about Mealy and Moore models. 20
3. Describe the following: 20
  - (i) CNF
  - (ii) CFGs

**Unit-II**

4. Describe in detail about Top Down Parsing and Bottom up Parsing. 20
5. Give a complete description about Push down Automata. 20

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**Unit-III**

6. Describe in detail about Turing machine. 20
7. Explain the following: 20
- (i) Decidable languages
  - (ii) The Halting Problem

**Unit-IV**

8. Explain the following: 20
- (i) Primitive Recursive functions
  - (ii) Theory of optimization
9. What do you mean by Reducibility and Computability?  
Explain in detail. 20