



Sandip Foundation's  
Sandip Institute Of Technology And Research Centre

## Department of **Computer Engineering**

### Unit Test-I

**SUBJECT:** - Discrete Mathematics      **CODE:** - 210241  
**CLASS:**-S.E. Computer      **Div:** - B      **Academic Year:** 2018-19  
**Max Marks:** 30M      **Date :** 17/08/2018

#### 1. Answer the following questions (Any Three)

- a) Discuss on naive set theory and axiomatic set theory. (6M)
- b) How many integers from 1-1000 are divisible by 2,3,5 or 7 using principle of inclusion exclusion (6M)
- c) Define multi-set. Explain operations on Multi-set. (6M)
- d) Write short-note on following (any two) (6M)
  - i. Countable and Uncountable set
  - ii. Finite and infinite Set
  - iii. Bounded and Unbounded Set
  - iv. Venn Diagram

#### 2. Compulsory Questions

- 1. Show that the sum of the cubes of three consecutive natural number (6M) is divisible by 9 for all 'n' using principle of mathematical induction.
- 2. Translate the following into logical notations: (6M)
  - a) For any value of x,  $x^2$  is non-negative.
  - b) All men are mortal
  - c) There exist a man
  - d) Some men are clever
  - e) For real number x and y, if x is positive and y is negative, then xy is negative.
  - f) The sum of two positive integers is always positive.