

## **SEQUENCES AND SERIES**

### **UNIT I**

Sequence (definition), Limit, Convergence of a sequence - Cauchy's general principle of convergence - Cauchy's first theorem on Limits-Bounded sequences - monotonic sequence always tends to a limit, finite or infinite - Limit superior and Limit inferior .

### **UNIT II**

Infinite series- Definition of Convergence, Divergence & Oscillation - Necessary condition for convergence -Convergence of  $\sum \frac{1}{n^p}$  and Geometric series. Comparison test, D'Alembert's ratio test, and Raabe's test .Simple problems based on above tests.

### **UNIT III**

Cauchy's condensation Test, Cauchy's root test and their simple problems- Alternative series with simple problems.

### **UNIT IV**

Binomial Theorem for a rational index-Exponential & Logarithmic series-Summation of series & approximations using these theorems.

### **UNIT V**

General summation of series including successive difference and recurring series.

### **TEXT BOOK(S)**

- [1] T.K. Manicavachagam Pillai, T. Natarajan, K.S. Ganapathy, Algebra, Vol. I, S. Viswanathan Pvt Limited, Chennai, 2004

UNIT - I - Chapter 2 Sections 1 to 7.

UNIT - II - Chapter 2 Sections 8 to 14, 16, 18

UNIT - III - Chapter 2 Sections 15, 17, 21 to 24

UNIT - IV - Chapter 3 Sections 5 to 11, 14 & Chapter 4 Sections 2, 3, 5 to 9

UNIT - V - Chapter 5 Sections 2 to 7

### **REFERENCE(S)**

- [1] M.K.Singal & Asha Rani Singal, A first course in Real Analysis, R. Chand & Co. 1999  
[2] Dr.S.Arumugam, Sequences & Series, New Gamma Publishers, 1999.