

**TELANGANA STATE BOARD OF INTERMEDIATE EDUCATION  
HYDERABAD**

**MATHEMATICS - IIA**

**Syllabus (w.e.f. 2013-14)**

**ALGEBRA**

**01 Complex Numbers:**

- 1.1 Complex number as an ordered pair of real numbers- fundamental operations
- 1.2 Representation of complex numbers in the form  $a+ib$ .
- 1.3 Modulus and amplitude of complex numbers - Illustrations.
- 1.4 Geometrical and Polar Representation of complex numbers in Argand plane- Argand diagram.

**02 De Moivre's Theorem:**

- 2.1 De Moivre's theorem- Integral and Rational indices.
- 2.2  $n$ th roots of unity- Geometrical Interpretations - Illustrations.

**03 Quadratic Expressions:**

- 3.1 Quadratic expressions, equations in one variable
- 3.2 Sign of quadratic expressions - Change in signs - Maximum and minimum values
- 3.3 Quadratic in-equations

**04 Theory of Equations:**

- 4.1 The relation between the roots and coefficients in an equation
- 4.2 Solving the equations when two or more roots of it are connected by certain relation
- 4.3 Equation with real coefficients, occurrence of complex roots in conjugate pairs and its consequences
- 4.4 Transformation of equations – Reciprocal Equations.

**05 Permutations and Combinations:**

- 5.1 Fundamental Principle of counting - linear and circular permutations
- 5.2 Permutations of ' $n$ ' dissimilar things taken ' $r$ ' at a time
- 5.3 Permutations when repetitions allowed
- 5.4 Circular permutations
- 5.5 Permutations with constraint repetitions.
- 5.6 Combinations-definitions and certain theorems

## **06 Binomial Theorem:**

- 6.1 Binomial theorem for positive integral index
- 6.2 Binomial theorem for rational Index (without proof). Approximations using Binomial theorem

## **07 Partial fractions:**

- 7.1 Partial fractions of  $f(x) / g(x)$  when  $g(x)$  contains non-repeated linear factors.
- 7.2 Partial fractions of  $f(x)/g(x)$  when  $g(x)$  contains repeated and/or non-repeated linear factors.  
Partial fractions of  $f(x)/g(x)$  when  $g(x)$  contains irreducible factors.

## **PROBABILITY**

### **08 MEASURES OF DISPERSION**

- 8.1 Range
- 8.2 Mean deviation
- 8.3 Variance and standard deviation of ungrouped/grouped data.
- 8.4 Coefficient of variation and analysis of frequency distribution with equal means but different variances.

### **09 Probability**

- 9.1 Random experiments and events
- 9.2 Classical definition of probability, Axiomatic approach and addition theorem of probability.
- 9.3 Independent and dependent events conditional probability-multiplication theorem and Bayes's theorem.
- 10 Random Variables and Probability Distributions:
- 10.1 Random Variables
- 10.2 Theoretical discrete distributions - Binomial and Poisson Distributions