

**BOARD OF INTERMEDIATE EDUCATION
A.P., HYDERABAD**

**BRIDGE COURSE IN
MATHEMATICS – II
FOR Bi.P.C. SECOND YEAR STUDENTS**

DETAILED SYLLABUS

I. ALGEBRA:

(16 periods)

1. Matrices:

- 1.1 Determinant of a matrix – properties – singular and non – singular matrices.
- 1.2 Adjoint and inverse of a matrix – properties. Statement of theorems (without proof)
- 1.3 Solutions of simultaneous linear equations in two and three variables – Cramer’s method -

2. Partial fractions: Resolving $\frac{f(x)}{g(x)}$ into partial fractions when

- 2.1. $g(x)$ Contains non – repeated linear factors only.
- 2.2. $g(x)$ Contains repeated and non – repeated linear factors only.
- 2.3. $g(x)$ Contains non – repeated irreducible factors only.
- 2.4. $g(x)$ Contains – repeated and non – repeated irreducible factors only.

(number of factors of $g(x)$ should not exceed 4)

3. Exponential and Logarithmic series:

- 3.1. e^x expansion for real x
- 3.2. expansion of $\log(1+x)$, condition on x.

(only statements of the results and very simple problems)

II. COORDINATE GEOMETRY:

(24 periods)

4. The Circle:

- 4.1. Equation of a circle – standard form – centre and radius – given ends of diameter – parametric equations of circle.
- 4.2. Position of a point – power of a point – length of tangent from a given point –
- 4.3. Equations of tangent, normal, chord of contact –
- 4.4. Relative positions of two circles – circles touching each other – common tangents –
- 4.5. Angle between two intersecting circles – orthogonal circles -

5. Conics:

- 5.1. Standard forms of Parabola, Ellipse and Hyperbola (without proofs) – Simple Examples
- 5.2. Equations of tangent and Normal (without proofs) – Simple Examples.

6. Polar Coordinates:

- 6.1. Relation between polar and Cartesian forms.
- 6.2. Distance formula – Area of a triangle.
- 6.3. Equations of circle given centre and radius.
(Simple problems related to the formulae)

III. 3D – COORDINATE GEOMETRY:

(05 periods)

7. Three dimensional coordinates:

- 7.1. Coordinate planes – coordinates of a point – Distance between two points in space.
- 7.2. Direction cosines and direction ratios of a line – angle between two lines – (without proofs).

IV. CALCULUS:

(30 periods)

8. Integration:
 - 8.1. Integration as the reverse process of differentiation - standard forms –
 - 8.2. Methods of Integration.
 - 8.3. Integration by parts – standard forms –
 - 8.4. Rational functions - irrational functions
9. Definite Integration:
 - 9.1. Properties (without proof) – simple problems on evaluation of definite integral.
 - 9.2. Reduction formulae of $\sin^n x, \cos^n x, \tan^n x, \cot^n x$ functions – (without proofs) – simple problems.
10. Differential equations:
 - 10.1. Formation – general and particular solutions and primitives – degree and order of differential equations.
 - 10.2. Solving first order and first degree differential equations – variables separable method – homogeneous functions – non homogeneous functions –

Total Number of Periods: 75

@ @ @