

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED.

B.A./ B.Sc. F.Y. MATHEMATICS.

(WITH EFFECT FROM JUNE-2009).

SEMESTER II.

Paper III (MT 103) : Integral Calculus (One Variable):

(Maximum Periods: 60)

Unit I: Definition of the integral, Existence of the integral.

Unit II : Properties of integral.

Unit III : Improper integral, Existence of the proper Riemann integral.

Text Book: **Introduction to Real Analysis.**

-William F. Trench, Pearson Education Pub.

Scope: **Chapter 3: Complete.**

Reference Books:

- 1) Integral Calculus by Shanti Narayan. (S. Chand and Co.)
- 2) Integral Calculus by Gorakh Prasad. (Pothishala prakashan)

B.A. / B. Sc. F. Y.

SEMESTER II.

Paper IV: (MT 104) :GEOMETRY.

(Max. No. Of Periods: 60)

Unit I: Prerequisites: [General equation of the second degree: - General equation of the second degree represents two straight lines, discriminate, homogeneous equation of the n^{th} degree represents n straight lines (real or imaginary) all pass through the origin, two straight lines joining the origin].

Polar equation of conic section:- polar equation of conic, equation to the directrices, equation to the asymptotes, polar equation of the tangent, equation of normal at a point.

General equation of Second degree: - Particular cases of conic section, general second degree equation represents conic section, centre of a conic section, condition for origin, the co-ordinates of centre. Equation of asymptotes of conic.

Unit II: The plane: First degree equation, converse, transformation to normal form, plane under given condition, system of planes, length of perpendicular from a point

Right line: equation of line, line through a point and given direction, line through two points, Angle between line and plane, conditions to lie in plane, coplanar lines, number of constants in equation of line, Shortest distance.

Unit III : The sphere: Equation of a sphere, general equation, plane section of sphere, intersection of two sphere, sphere with given diameter, equations of a circle, sphere through given circle, intersection of a sphere and a line, equation of tangent plane, Angle between two spheres, conditions of orthogonality.

Cones and Cylinders: Cone, equation of cone, right circular cone and equation, Cylinder and its equation.

Text Book:- 1) The Elements of Coordinate Geometry

–S.L. Loney. (S.Chand and Co), (Reprint 2001)

Scope: Prerequisites: [Chapter– VI: Art. 114 to 126. Chapter- VIII: Art.161, 162,163. Chapter- XIII: Art. 312 to 317]. (No long question to be set on Prerequisites).

Chapter XIV: Art 335, 339 to 342, 345

Chapter XV: - Art 348 to 352, 356 to 358.

2) Analytical Solid Geometry.

- Shanti Narayan, S.Chand and Co.

Scope: Chapter 2: 2.1, 2.2, 2.3, 2.32, 2.4, 2.41, 2.42, 2.5, 2.7.

Chapter 3: 3.1, 3.11, 3.12, 3.14, 3.2, 3.3 to 3.7.

Chapter 6: 6.11,6.12,6.13,6.31,6.32,6.33,6.4,6.41,6.5,6.6,6.7,6.71.

Chapter7: 7.1, 7.12, 7.61, 7.62, 7.7, 7.71, 7.81, 7.82.

Reference Books:

1) Analytical Geometry of Two and Three Dimensions:

-Quiz Zameeruddin; Narosa Pub.

2) Text Book on Coordinate Geometry

-Gorakh Prasad, H.C. Gupta.

Pothishala Pvt. Ltd.

3) Lecturers on Vector Analysis and Geometry

- T.M. Karde and M.S. Bendre.

B.Sc. F.Y. PRACTICAL PAPER

WITH EFFECTIVE FROM June 2009.

PAPER V: (MP105): PRACTICAL PAPER:

(Max. No. Of Periods: 60)

Section 1: Introduction to MATLAB: MATLAB Programming language, Built-in Functions, Graphics, computations, External interface and Tool boxes.

Basics of MATLAB: MATLAB windows, desktop, command window, workspace, Figure and Editor Windows, Input-output, File types, platform dependence, Printing.

Programming in MATLAB: Scripts and functions. Script files, function files: Executing of function, writing good functions, sub functions, compiled functions.

Section 2: Interactive computation :- (MATRICES) Matrices and Vectors, input, indexing, matrix manipulation, creating vectors.

Matrix and Array operations, Arithmetic operations, Relational operations, logical operations, Elementary math functions, matrix functions, character string. Command line Functions, Inline functions, Anonymous functions.

Built-in functions, finding the determinant of matrix, finding eigenvalues and eigenvectors.

Saving and loading Data, Importing data files, recording a session.

Applications: - Linear Algebra. Solving a linear system, Gaussian elimination, Finding eigenvalues and eigenvectors, matrix factorization, advanced topics.

Section 3: Plotting of Graphs: - Plotting simple Graphs.

Graphics: - Plotting of 2D graphs, Using subplot for multiple graphs, 3D Plots (Drawing of different Geometrical objects), saving and Printing.

Reference Books: (for MATLAB Users).

1. Getting Started With MATLAB 7.
- Rudra Pratap, Oxford University Press, (Indian Eden)
www.oup.com, ISBN-0-19-568001-4

Scope Chapter 1: Art. 1.1,1.6.
Chapter 3: art 3.1, 3.2, 3.4, 3.5, 3.6, 3.7,
Chapter 4: 4.1, 4.2
Chapter 5: Art. 5.1
Chapter 6: Art 6.1, 6.2, 6.3.

NOTE: 1) Section 1 is introductory part, so no question to be set for Examination.
2) Record book must contain 10 practical on section 2 and 10 Practical on section 3.
3) Section 1 is for MATLAB Users only.

SOFTWARES: MATLAB or Related Freeware.

N.B.: PRACTICAL PAPER IS ONLY FOR B.Sc. Students.

SEMESTER PATTERN FOR B.A. /B.Sc. MATHEMATICS.

B.A. /B.Sc. F.Y.

A):

Paper no.	Total marks for the year	External theory Examination. (University)	Internal Assessment (College)	Total marks of the year.
I (Theory)	50	40	10	
II (Theory)	50	40	10	
III (Theory)	50	40	10	
IV (Theory)	50	40	10	
V (Practical Yearly)	---	100 (External)	----	
TOTAL	---			200-Theory. 100-Practical

- B):** 1) External 40 Marks = 10 Marks Objective and 30 Marks Subjective.
2) Internal 10 Marks = 05 Marks for Mid term Exam. And 05 Marks for Home Assignment.
3) **Work Load** : Theory 4 Periods / Paper/Week
Practical 2 Periods / Week.