

Department of Higher Education , Govt. of M.P.
B.Sc./ BA Semester wise syllabus

As Recommended by central Board of studies and Approved by the Governor of M.P.

Max. Marks : 50

Class	:	B.Sc./B.A.
Semester	:	V
Title of subject Group :		Mathematics- I
Paper No. & Title	:	Real Analysis
Compulsory / Optional	:	Compulsory

: Particulars:

Unit -1	Riemann integral. Integrability of continuous and monotonic functions. The fundamental theorem of integral calculus. Mean value theorems of integral calculus.
Unit -2	Partial derivation and differentiability of real-valued functions of two variables
Unit -3	Schwarz and Young's theorem. Implicit function theorem. Fourier series of half and full intervals.
Unit -4	Improper integrals and their convergence. Comparison tests, Abel's and Dirichlet's tests Frullani's integral. Integral as a function of a parameter.
Unit -5	Continuity, derivability and integrability of an integral of a function of a parameter.

Text Books :-

1. R.R Goldberg, Real Analysis, Oxford & IBH Publishing Co., New Delhi, 1970.
2. G.F. Simmons. Introduction to Topology and Modern Analysis. McGraw-Hill, 1963.
3. e-iz- fgUnh xzaFk vdkneh dh iqLrdsa A

Reference Books :-

1. T.M Apostol, Mathematical Analysis. Narosa Publishing House. New Delhi, 1 985
2. S. Lang. Undergraduate Analysis, Springer-Verlag, New York, 1983.
3. D. Somasundaram and B. Choudhary, A first Course in Mathematical Analysis. Narosa Publishing House, New Delhi 199 /.
4. Shanti Narayan, A Course of Mathematical Analysis. S. Chand & Co. Delhi.
5. RK. Jain and S.K. Kaushik, An introduction to Real Analysis, S. Chand & Co., New Delhi. 2000.
6. P.K. Jain and K. Ahmed Metric Spaces, Narosa Publishing House, New Delhi, 1996.
7. S. Lang, Undergraduate Analysis, Springer-Verlag, New York 1983.
8. E.T. Copson, Metric Spaces, Cambridge University Press, 1968.

Department of Higher Education , Govt. of M.P.
B.Sc./ BA Semester wise syllabus

As Recommended by central Board of studies and Approved by the Governor of M.P.

Max. Marks : 50

Class	:	B.Sc./B.A.
Semester	:	V
Title of subject Group :		Mathematics- II
Paper No. & Title	:	II- Linear Algebra
Compulsory Optional :		Compulsory

Particulars:

Unit -1	Definition and examples of vector spaces, subspaces. Sum and direct sum of subspace. Linear span. Linear dependence, independence and their basic properties.
Unit -2	Basis. Finite dimensional vector spaces, Existence theorem for basis Invariance of the number of elements of a basis set. Dimension. Existence of complementary subspace of a subspace of a finite dimensional vector space.
Unit -3	Dimension of sums of subspaces. Quotient space and its dimension. Dual space, Bidual space and natural isomorphism. Adjoint of a linear transformation.
Unit -4	Linear transformations and their representation as matrices. The Algebra of linear transformations. The rank nullity theorem.

Unit -5	Eigen values and eigen vectors of a linear transformation. Diagonalisation
---------	--

Text Books :

1. K. Hoffman and R.Kunze, Linear Algebra, 2nd Edition. Prentice Hall Englewood Cliffs, New Jersey. 1971.

Reference Books:

1. K.B. Datta. Matrix and Linear Algebra, Prentice hall of India Pvt Ltd., New Delhi, 2000.
2. S.K. Jain, A. Gunawardena & P.B. Bhattacharya. Basic Linear Algebra with MATLAB Key college Publishing (Springer-Verlag) 2001.
3. S. Kumarsaran, Linear Algebra, A Geometric Approach Prentice – Hall of India, 200

Department of Higher Education , Govt. of M.P.

B.Sc./ BA Semester wise syllabus

As Recommended by central Board of studies and Approved by the Governor of M.P.

Max. Marks : 50

Class	:	B.Sc./B.A.
Semester	:	V
Title of subject Group:		Mathematics- III
Paper No. & Title	:	Discrete Mathematics
Compulsory / Optional:		Compulsory

: Particulars:

Unit -1	Cardinality. Mathematical Induction Principle of Inclusion and exclusion
Unit -2	Binary Relations. Equivalence Relations and Partitions. Partial Order Relation
Unit -3	Graphs, Multigraphs. Weighted Graphs.

Unit -4	Paths and Circuits. Shortest Paths. Eulerian Paths and Circuits
Unit -5	Trees and its Properties.

Text Books:

1. C.L. Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, Computer Science series 1986.
2. Narsingh Deo : Graph Theory, McGraw Hill.

Reference Book:

1. Babu Ram, Discrete Mathematics, Vinayak Publication.
2. म.प्र. हिन्दी ग्रंथ अकादमी