

**GOVERNMENT THAKUR RANMAT SINGH COLLEGE, REWA (M.P.)**

**Class:-B.Sc./B.A (Hons.) Mathematics, Semester:-I<sup>st</sup>**

**Subject:-Mathematics(H-1)**

**Paper Title: Matrices, Theory of Equation and Geometry**

1. State and prove De-moiver theorem with example and its application  
Or
2. A Study of Eigen values and Eigen vectors with example

**Class:-B.Sc./B.A (Hons.) Mathematics, Semester:-I<sup>st</sup>**

**Subject:-Mathematics(H-2)**

**Paper Title: Calculus and Trigonometry**

1. A study of Maclaurin and Taylor series expansions with example  
Or
2. A study of expansion of trigonometric function with example.

**Class:-B.Sc.(Subs.) Mathematics, Semester:-I<sup>st</sup>**

**Subject:-Mathematics (S-1)**

**Paper Title: Matrices, Geometry ,Calculus and Trigonometry**

1. A study of general equation of second degree
2. Or
3. A Study of Successive differentiation with example

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**Class:-B.sc/B.A (Hons.) Mathematics, Semester:-III<sup>rd</sup>**

**Subject:-Mathematics(H-5)**

**Paper Title :Advanced calculus**

1. A Study of First mean value theorem and second mean value theorem with example

Or

2. A Study of definition of sequence and theorems on limit of sequences

**Class:-B.Sc/B.A(Hons.) Mathematics, Semester:-III<sup>rd</sup>**

**Subject:-Mathematics(H-6)**

**Paper Title :Mechanics**

1.A Study of virtual work and principle of virtual work

Or

2.A Study of Catenary and Cartesian equation of catenary and properties of catenary

**Class:-B.Sc. ( Subs.)Mathematics, Semester:-III<sup>rd</sup>**

**Subject:-Mathematics(S-3)**

**Paper Title:-Advanced Calculus and Mechanics**

1.A Study of Alternating series and Leibnitz's theorem

Or

2. A Study of Chain rule of differentiability with example.

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**Class:-B.Sc/B.A.(Hons.)MathematicsSem-V**

**Subject:-Mathematics H-9**

**Paper Title :Linear Algebra and Discrete Mathematics**

1. A study of Dimension theorem for vector space .State and prove Existence theorem.

Or

2. A study of Linear Transformation with example and its properties

**Class:-B.Sc /B.A.(Hons.)MathematicsSem-V**

**Subject:-Mathematics H-10**

**Paper Title :Real Analysis and Discrete Mathematics**

1. A Study of Riemann Integral with Theorem.State and prove Young's Theorem

Or

2. A Study of Fundamental Theorem of Integral Calculus. Mean Value Theorem of integral calculus

**Class:-B.Sc. (Subs.) Mathematics, Semester:V<sup>th</sup>**

**Subject:-Mathematics(S-5)**

**Paper Title :Linear Algebra, Real Analysis and Discrete Mathematics**

1. A study of Rank and Nullity of linear Transformation

Or

2. A study of vector space with general properties

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**Class: - M.Sc. Mathematics, Semester:-I<sup>st</sup>**

**Subject: - Abstract Algebra –I (Paper-1)**

A study of Galois Theory.State and prove Fundamental theorem of Isomorphism

Or

A study of Composition series and state and prove Jordan Holder Series theorem

**Class:- M.Sc. Mathematics, Semester:-I<sup>st</sup>**

**Subject:- Real Analysis (Paper-2)**

A Study of Integration and differentiation, The fundamental theorem of calculus

Or

A Study of Functions of several variables and Linear transformations.

**Class:- M.Sc. Mathematics, Semester:-I<sup>st</sup>**

**Subject: - Topology-I (Paper-3)**

1.A Study of Definition and examples of topological spaces

Or

2.A Study of Schroeder-Bernstein theorem, Cantor's theorem

**Class: - M.Sc. Mathematics, Semester:-I<sup>st</sup> (Paper-4)**

**Subject: - Complex Analysis-I**

1. A Study of Morera's theorem and liouville's Theorem

Or

A Study of Cauchy Residue Theorem and Cauchy Integral Formulae.

**Class:- M.Sc. Mathematics, Semester:-I<sup>st</sup> (Paper-5)**

**Subject:-Introduction to Software Organisation**

1.A Study of Computer with Advantages and Disadvantages.

Or

2.A Study of Primary memory and secondary memory and its properties and types

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**Class: - M.Sc. Mathematics, Semester:-III<sup>rd</sup>**

**Subject: - Functional Analysis (Paper -1)**

A Study of Riesz Lemma and Compactness.

Or

A Study of Banach spaces and Examples.

**Class: - M.Sc. Mathematics, Semester:-III<sup>rd</sup>**

**Subject: - General Theory of Relativity –I (Paper –II)**

A Study of Tensors and Algebra of tensors

Or

A Study of Symmetric and skew symmetric tensors.

**Class: - M.Sc. Mathematics, Semester:-III<sup>rd</sup>**

**Subject: - Special Function ( Paper-III)**

1. A Study of Gamma function, Gauss multiplication theorem.

Or

2. A Study of Factorial function, Legendre's duplication formula,

**Class: - M.Sc. Mathematics, Semester:-III<sup>rd</sup>**

**Subject: - Programming in C ++**

1. A Study of Loops, Structures and functions

Or

2. A Study of In overview of C++ Programming.

**Class: - M.Sc. Mathematics, Semester:-III<sup>rd</sup>**

**Subject: - Integral Transforms-I (Paper-V)**

1. A study of Laplace Transform and its Applications.

Or

2. A study of Laplace's Wave Equations and related problems.