Govt. College, Aharwala (Bilaspur) -Yamuna Nagar

Name of Techer	Mr Mohinder
Department	Mathematics
Class & Section	BA/BSC II
Subject and Code	Advanced Calculus
Semester Duration	1st September 2022 - 24th December 2022

Topics
1st September 2022 - 15th September 2022
Continuity, Sequential Continuity, properties of continuous functions, Uniform continuity, chain rule of differentiability.
16th September 2022 - 30th September 2022
Mean value theorems; Rolle's Theorem and Lagrange's mean value theorem and their geometrical interpretations. Taylor's Theorem with various forms of remainders, Darboux intermediate value theorem for derivatives, Indeterminate forms.
1st October 2022 - 15th October 2022
Limit and continuity of real valued functions of two variables. Partial differentiation.
16th October 2022 - 31st October 2022
Total Differentials; Composite functions & implicit functions. Change of variables. Homogenous functions & Euler's theorem on homogeneous functions.
1st November 2022 - 15th November 2022
Taylor's theorem for functions of two variables.Differentiability of real valued functions of two variables.
16th November 2022 - 30th November 2022

Schwarz and Young's theorem. Implicit function theorem. Maxima, Minima and saddle points of two variables. Lagrange's method of multipliers.
1st December 2022 - 15th December 2022
Curves: Tangents, Principal normals, Binormals, Serret-Frenet formulae. Locus of the centre of curvature, Spherical curvature, Locus of centre of Spherical curvature
16th December 2022 - 24th December 2022
Involutes, evolutes, Bertrand Curves. Surfaces: Tangent planes, one parameter family of surfaces, Envelopes.
Note:- The teaching of topics to the students on the duration mentioned above may not be exactly followed and may have little variations/fluctuations because of some unforeseen circumstances. For example: various Functions/Activities organized by the College (Musical Meet, Blood Donation, Important Days Celebrations, Co-Curricular/Extra-curricular Activities etc.), Response of Students in the Class, Request of Students for Repetition of some specific Topics, Practical Examinations, Unpredicted Leaves, Restricted Holidays etc.

Govt. College, Aharwala (Bilaspur) -Yamuna Nagar
Lesson Plan (2022-23) [Odd Semester]

Name of Techer	**Mr Mohinder**
Department	**Mathematics**
Class & Section	**BA/BSC I Algebra**
Subject and Code	**Algebra, BM 111**
Semester Duration	**1st September 2022 - 24th December 2022**

Topics

1st September 2022 - 15th September 2022

Basic concepts of matrices, Symmetric, Skew symmetric, definitions, examples, Elementary Operations on matrices. definitions ,examples.

16th September 2022 - 30th September 2022

Hermitian and skew Hermitian matrices. definitions ,examples, Rank of a matrices. Inverse of a matrix, Linear dependence and independence of rows and columns of matrices

1st October 2022 - 15th October 2022

Row rank and column rank of a matrix. definitions ,examples, Eigenvalues, eigenvectors. definitions ,examples, characteristic equation of a matrix
Minimal polynomial of a matrix.

16th October 2022 - 31st October 2022

Cayley Hamilton theorem and related examples.

1st November 2022 - 15th November 2022

Applications of matrices to a system of linear (both homogeneous and non– homogeneous) equations, Theorems on consistency of a system of linear equations.

16th November 2022 - 30th November 2022
Bilinear and Quadratic forms,Relations between the roots and coefficients of general polynomial equation in one variable.

1st December 2022 - 15th December 2022
Solutions of polynomial equations having conditions on roots. Common roots and multiple roots. Transformation of equations.

16th December 2022 - 24th December 2022
Nature of the roots of an equation Descarte's rule of signs. Solutions of cubic equations (Cardon's method). Biquadratic equations and their solutions.

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Govt. College, Aharwala (Bilaspur) -Yamuna Nagar

Name of Techer	Mr Mohinder
Department	Mathematics
Class & Section	BCOM I
Subject and Code	Buisiness Mathematics
Semester Duration	1st September 2022 - 24th December 2022

Topics

1st September 2022 - 15th September 2022

Set, subsets and operations on sets, Venn diagram of sets. Power set of a set.

16th September 2022 - 30th September 2022

Equivalence relation on a set and partition of a set, Permutation and combinations, Partially

1st October 2022 - 15th October 2022

ordered sets, Lattices (definition and examples). Boolean algebra (definition and examples)

16th October 2022 - 31st October 2022

Epsilon and delta definition of the continuity of a function of a single variable, Basic properties of
limits, Continuous functions and classifications of discontinuities,

1st November 2022 - 15th November 2022

Derivative of a function,
Derivatives of Logarithmic, exponential, trigonometric, inverse trigonometrical and hyperbolic
functions. Higher order derivatives.

16th November 2022 - 30th November 2022

Formation of differential equations order and degree of the differential equation,

1st December 2022 - 15th December 2022

Ordinary
differential equations of first degree and the first order, exact differential equations
Linear differential equations of higher order with constant coefficients,

16th December 2022 - 24th December 2022

Homogeneous linear
differential equations and linear differential equations reducible to homogenous differential
equations, Applications of differential equations to geometry,

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Govt. College, Aharwala (Bilaspur) -Yamuna Nagar

Name of Techer	Mr Mohinder
Department	Mathematics
Class & Section	BCOM I
Subject and Code	Buisiness Mathematics
Semester Duration	1st September 2022 - 24th December 2022

Topics

1st September 2022 - 15th September 2022

Logarithms, Anti-logarithms

16th September 2022 - 30th September 2022

Sequences and Series: Arithmetic & Geometric Progressions.

1st October 2022 - 15th October 2022

Differentiation: Idea of simple derivative of different functions (excluding Trigonometrical functions);

16th October 2022 - 31st October 2022

Rules of differentiation (simple standard forms).
Maxima and Minima of functions of one variable (including 2nd or 3rd order derivatives) relating to cost,
revenue and profit.

1st November 2022 - 15th November 2022

Matrices and Determinants: concept of matrix, types, and algebra of matrices;

16th November 2022 - 30th November 2022

properties of determinants;

1st December 2022 - 15th December 2022

Finding inverse of a matrix through adjoint and elementary row or column operations; solution of a system of linear equations having unique solution and involving not more than three

16th December 2022 - 24th December 2022

Compound Interest and Annuities: different types of interest rates, concept of present value and amount of
a sum; types of annuities; present value and amount of an annuity (including the case of continuous
compounding); valuation of simple loans and debentures; problems relating to sinking funds

Note:-

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Govt. College, Aharwala (Bilaspur) -Yamuna Nagar

Name of Techer	Mr Mohinder
Department	Mathematics
Class & Section	BA III
Subject and Code	Group & Rings
Semester Duration	1st September 2022 - 24th December 2022

Topics

1st September 2022 - 15th September 2022

Definition of a group with example and simple properties of groups,

16th September 2022 - 30th September 2022

Subgroups and
Subgroup criteria, Generation of groups, cyclic groups, Cosets, Left and right cosets,

1st October 2022 - 15th October 2022

Index of a sub-group Coset decomposition, Largrage's theorem and its consequences,

16th October 2022 - 31st October 2022

Homomorphisms, isomophisms, automorphisms and inner automorphisms of a group.

1st November 2022 - 15th November 2022

Automorphisms of cyclic groups, Permutations groups. Even and odd per mutations.
Alternating groups, Cayley's theorem, Center of a group and derived group of a group.

16th November 2022 - 30th November 2022

Normal subgroups, Quotient groups

1st December 2022 - 15th December 2022

Introduction to rings, subrings, integral domains and fields, Characteristics of a ring. Ring
homomorphisms, ideals (principle, prime and Maximal) and Quotient rings,

16th December 2022 - 24th December 2022
Euclidean rings, Polynomial rings, Polynomials over the rational field, The Eisenstein's criterion, Polynomial rings over commutative rings, Unique factorization domain, R unique factorization domain implies so is R[X1 , X2……Xn]

Note:-
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