

Vector Calculus (BM-123)

(2021-2022)

W.E.F. 21 March 2022

1 21 March 2022 to 31 March 2022

UNIT-1st : Scalar and vector product of three vectors, Product of four vectors, Reciprocal vectors and related problems.

2 1st April 2022 to 15 April 2022

UNIT-1st Vector differentiation, scalar valued point functions, vector valued point functions, derivative along a curve, directional derivatives and Examples.

3 16 April 2022 to 30 April 2022

UNIT-2 Gradient of a scalar point function, geometrical interpretation of $\text{grad}\phi$, character^{istic} of gradient as a point function and related problems.

4 1st May 2022 to 15 May 2022

UNIT-2. Divergence and curl of vector point function, characteristic of $\text{div}\vec{F}$ and $\text{Curl}\vec{F}$ as point function, Examples. Gradient, divergence and curl of sums and product, and their related vector identities. Laplacian operator.

5 16 May 2022 to 31 May 2022

UNIT-3 Orthogonal curvilinear coordinates. Conditions for Orthogonality. Fundamental triad of mutually orthogonal unit vectors. Gradient divergence, curl and Laplacian operators in terms of orthogonal curvilinear co-ordinates, cylindrical, spherical co-ordinates.

6 1st June 2022 to 15 June 2022

UNIT 4 Vector integration, line integral, Surface, Volume integral and related problems.

7 16 June 2022 to 30 June 2022

Unit 4 Theorem of Gauss, Green, Stokes and problems related on these.

8 Discussion about attemptation of paper.

on Paralelly

Rgn

(Dr. RAJKUMAR)
Asstt. Prof. of Mathematics
G.C.G. RAVIA (SIRSA)

B.Sc/B.A. 2ND YEAR (4TH SEM)

2021-2022 (SESSION)

Paper 1st (BM-241)

W.O.F. 21 March, 2022

1st March 2022 to 31 March 2022

UNIT 1st: Boundedness of the set of real numbers, least upper bound, greatest lower bound of a set, neighbourhoods, interior points, isolated points, limit points, open sets, closed sets etc.

1st April 2022 to 15 April 2022

UNIT 1st: Interior of a set, closure of a set in real numbers and their properties. Bolzano-Weierstrass theorem. Open Covers. Compact sets and Heine-Borel Theorem and Examples.

16 April 2022 to 30 April 2022

UNIT 2. Sequence: Real sequences and their convergence, theorems on limits of sequence, bounded and monotonic sequences, Cauchy's sequence, Cauchy general principle of convergence. Subsequences, Subsequential limits.

1st May 2022 to 15 May 2022

UNIT 2. Infinite Series, convergence and divergence of infinite series, comparison tests of positive terms infinite series, Cauchy's general principle of convergence of series, convergence and divergence of geometric series. Hyper Harmonic series or p-series.

16 May 2022 to 31 May 2022

UNIT 3. Infinite Series: D'Alembert's Ratio Test, Raabe's test, Logarithmic test, de Morgan and Bertrand's test, Cauchy's nth root test, Gauss test, Cauchy's integral Test. Cauchy's Condensation test. Examples.

1st June 2022 to 15 June 2022

UNIT 4. Alternating Series: Leibnitz's test, absolute and conditional convergence. Arbitrary series: Abel's Lemma, Abel's test, Dirichlet's test, Insertion and removal of parenthesis, re-arrangement of terms in a series. Examples.

16 June 2022 to 30 June 2022

UNIT 4. Dirichlet's theorem, Riemann's Rearrangement theorem. Pringsheim's theorem (statement only) multiplication of Series, Cauchy's product of series (definitions and Examples only). Convergence and absolute convergence of infinite products.

8 Discuss about the problems all over syllabus and attemptation of exam.

15/6/22
(Dr. RASKUMAR)
Asstt. Prof. of Mathematics
G.C.G. RANIA

LINEAR ALGEBRA (BM-362)

(2021-2022)

N.E.F. 21-03-2022

1 21 March 2022 to 31 March 2022

Unit 1st : Vector spaces, subspaces, Sum and Direct sum of subspaces, Linear span, L.I and L.D. subsets of V.S. Finitely generated vector spaces. Examples.

2 1st April 2022 to 15 April 2022

Unit I : Existence theorem for basis of a finitely generated V.S. Finite dimensional V.S., Invariance of the number of elements of basis sets, Dimensions, Quotient spaces and its dimension.

3 16 April 2022 to 30 April 2022

Unit 2nd : Homomorphism and Isomorphism of V.S., linear transformations and linear forms on vector spaces, V.S of all linear transformations. Dual spaces, Bidual spaces, Null space, Range space of a L.T., Rank and Nullity theorem.

4 1st May 2022 to 15 May 2022

UNIT-3 : Algebra of linear transformations, minimal polynomial of a L.T., Real, Real

5 16 May 2022 to 31 May 2022

UNIT-3 : Singular and Non-Singular linear transformations, matrix of a linear transformations. Change of basis, Eigen values and Eigen vectors of L.T.

6 1st June 2022 to 15 June 2022

UNIT 4TH : Inner Product spaces, Cauchy-Schwarz inequality, orthogonal vectors, Orthogonal Complements, Orthogonal sets and basis.

7 16 June 2022 to 30 June 2022

UNIT 4TH : Bessel's inequality for f.d.V.S., Gram-Schmidt Orthogonalization process, Adjoint of L.T. and its properties, Unitary linear transformations. Examples etc.

8 Discussion about proper atttemptation of pages.
 cultured

Rich
(DR. R. K. KUMAR)
Asstt. Prof. of mathematics
G.C.G. RAJIA

B.A / B.Sc -1st (2ND SEM)

Number Theory & Trigonometry (B.M-121)

(2021-2022)

W.e.f. 21 March 2022

1. 21 March 2022 to 31 March 2022

UNIT-1st Divisibility, G.C.D., L.C.M, Primes, Fundamental Theorem of Arithmetic. Linear Congruences.

2. 1st April 2022 to 15 April 2022

UNIT-1st Fermat's theorem, Wilson's theorem and its converse. Linear Diophantine equations in two variables. Related examples and problems.

3. 16 April 2022 to 30 April 2022

UNIT-2. C.R.S and R.R.S. modulo m . Euler's ϕ function. Chinese Remainder Theorem. Quadratic Residues & related problems.

4. 1st May 2022 to 15 May 2022

UNIT-2 Legendre Symbols, Lemma of Gauss, Gauss Reciprocity Law, $[x]$, The functions $d(n)$ and $\sigma(n)$. Mobius function and mobious Inversion formula.

5. 16 May 2022 to 31 May 2022

UNIT-3 : De Moivre's Theorem and its applications. Expansion of trigonometrical functions. Direct circular and hyperbolic functions and their properties.

6. 1st June 2022 to 15 June 2022

UNIT4 Inverse circular and hyperbolic functions and their properties.

7. 16 June 2022 to 30 June 2022

UNIT4 : Logarithm of a Complex quantity. Gregory's series. Summation of Trigonometric series & related problems.

8. Discussion about proper attempt of paper.

inwardly

Rajkumar

(Dr. RAJKUMAR)
Asstt. Prof. of Mathematics
G.C.G. PANIA