

17BCAMAT21(B): Mathematics-II**Teaching Hours: 4 Hrs/week****Marks: Main Exam: 80****IA: 20**

UNIT I 10Hrs
Infinite Series: Convergence and divergence of infinite series, Comparison Test, D'Alembert's Ratio Test, Gauss Test, Raabe's test, Logarithmic Test, Cauchy's Root Test, Alternating series, Conditional convergence & absolute convergence.

UNIT II 10Hrs
Determinants: Definition, Minors, Cofactors, Properties of Determinants.
Matrices: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint, Inverse, Cramer's Rule, Rank of Matrix, Dependence of Vectors, Eigen Vectors of a Matrix, Caley-Hamilton Theorem (without proof).

UNIT III 10Hrs
Limits & Continuity: Limit at a Point, Properties of Limit, Computation of Limits of Various Types of Functions, Continuity at a Point, Continuity Over an Interval, Intermediate Value Theorem, Type of Discontinuities

UNIT IV 10Hrs
Differentiation: Derivative, Derivatives of Sum, Differences, Product & Quotients, Chain Rule, Derivatives of Composite Functions, Logarithmic Differentiation, Rolle's Theorem, Mean Value Theorem, Expansion of Functions (Maclaurin's & Taylor's), Indeterminate Forms, L'Hospital's Rule, Maxima & Minima, Curve Tracing, Successive Differentiation & Leibnitz Theorem.

UNIT V 10Hrs
Integration: Integral as Limit of Sum, Fundamental Theorem of Calculus (without proof), Indefinite Integrals, Methods of Integration Substitution, By Parts, Partial Fractions, Reduction Formulae for Trigonometric Functions, Gamma and Beta Functions (definition).

References:

1. John Bird, Higher Engineering Mathematics, Elsevier
2. B.S. Grewal, Elementary Engineering Mathematics, Khanna Publishers.
3. Shanti Narayan, Integral Calculus, S. Chand & Company.
4. Shanti Narayan and P K Mittal, Text book of Matrices, 5th edition S Chand and Co..
5. Shanti Narayan, Differential Calculus, S. Chand & Company.

Additional Reading:

6. D.C. Sancheti, Business Mathematics, Eleventh Edition, Sultan Chand & Sons
7. K. Ganesan, Sundarammal Kesavan, K.S. Ganapathy Subramanian & V. Srinivasan, Engineering Mathematics, Gamma publications.