Subject : Mathematics

Teacher name : Rashminder Semester 1st

Name of the Paper : Paper 2

Class: MSc (Mathematics)

January2021

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| Definition and existence of Riemann Stieltjes integral, properties of the integral, integration and differentiation, the fundamental theorem of integral calculus, integration by parts, integration of vector-valued functions, Rectifiable curves |

February 2021

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| Pointwise and uniform convergence, Cauchy criterion for uniform convergence, Weirstrass M-test, Abel’s test and Dirichlet’s test for uniform convergence, uniform convergence and continuity, uniform convergence and Riemann Stieltjes integration, uniform convergence and differentiation, existence of a real continuous nowhere differentiable function, equicontinous families of functions, Weierstrass approximation |

March 2021

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| Functions of several variables : linear transformations, Derivative in an open subset of R n, Chain rule, Partial derivatives, directional derivatives, the contraction principle, inverse function theorem, Implicit function theorem, Jacobians, extremum problems with constraints, Lagrange’s multiplier method, Derivatives of higher order, mean value theorem for real functions of two variables, interchange of the order of differentiation, Differentiation of integrals Power Series : Uniqueness theorem for power series, Abel’s and Tauber’s theorem, Taylor’s theorem, Exponential & Logarithm functions, Trigonometric functions, Fourier series, Gamma function. Integration of differential forms: Partitions of unity, differential forms, stokes theorem |