Name of Teacher: Ms. Pooja
Class: B.Sc 3rd Semester 5th
Paper : Real analysis **Session:2023-24**

Week 1	
	Introduction to syllabus
	Riemann integral definitions
Week 2	
	Theorems
	Examples
	Darboux's theorem
	Conditions of integrability
Week 3	
	Integrability of continuous functions
	Examples
	Integrability of monotonic functions
	Theorems
	Riemann sum
	Second definition of integrability
Week 4	
	Theorems
	Examples & Exercise
	Properties of riemann integral
	Theorems
	Assignment 1
Week 5	
	First mean value theorem
	Examples
	Primitive of a function
	Mean value theorem of integral calculus
	Examples & Exercise
Week 6	
	Improper integral
	Solved examples & Exercise
	Comparison tests
Week 7	
	Theorems
	Examples & Exercise
	General test for convergence
	Problems
Week 8	
	Test
	General test for convergence at infinity
	Examples
	Frullani's integral
	Examples
Week 9	
	Integral as a function of a parameter
	Continuity of the integral
	Examples & Exercise

Name of Teacher:
Class: B.Sc 3rd Semester 5th
Paper : Real analysis

Session:2023-24

	ntroduction to metric space and Definition
	Examples
Week 10	
	Bounded sequence
	Bounded function
	nduced metric
	Examples
	Semi metric space
	Examples
Week 11	
	Bounded and unbounded metric space
	Unit test
	Open and closed sets
	Open sphere/closed sphere
	Examples
Week 12	
	Interior point and nbd of a point
	Examples
	Interior of a set
	Theorems
	Examples
Week 13	
	Theorems
	Exterior points and exterior of a set
	Subspaces of a metric space
	Theorems
	Examples
Week 14	
	Sequences in metric spaces
	Theorems
	Cauchy's sequence
	Examples
Week 15	
	Cantor's intersection theorem
	Contraction principle in a metric space
	Continous functions
	Uniform continuity
	Assignment 2
Week 16	
	Compact set and compact metric space
	Connectedness in metric spaces

Name of the Assistant/Associate Professor: Ms. Pooja

Class and Section: B. Sc. (NM) 2nd Year

Session : 2023-24

Subject: Partial Differential Equations

Week 1	Introduction of Partial differential Equations and their type and degree
	Example of formation of Partial Diff. Equ.
Week 2	Formation of equation by elimination of arbitrary functions
	Example of such problems
	Introduction to 1st order partial differential equations
	Solution of 1st order PDE by direct integration method
	Solution of 1st order PDE by Lagrange Method
	Examples and problems of Lagrange Method
Week 3	Introduction to 1st order non-linear Partial Diff. Equa.
	Simple problems on 1st order Non-linear PDEs
	Introduction to "General methods of Solutions" to 1st order linear PDE
	Introduction to Charpit Method for 1st order PDE
Week 4	Different forms of Charpit methods and problems based on
	Introduction to Jacobi methods for 1st order Non-linear Part differential equation
	Example of Jacobi methods
Week 5	Problems of 1st order non-linear PDE and their solution by J method
	Test of syllabus covered so far
	Linear partial differential equations of 2nd and higher order
Week 6	Examples and solution of Homogenous linear partial differe equations with constant coefficients
	Problems and solutions on Homogenous PDE
	Solution of non-homogenous PDE with constant Coefficien
	Problems and discussion on solutions of above
Week 7	Assignment 1 given to students
	Partial differential equations with variable coefficients redu equation with constant coefficients
	Problems based on above methods
	Introduction and classification of 2nd order partial differenti equations
	Problems and solutions on above

Week 8	Canonical form of 2nd order PDE
	Problems on above
Week 9	Reduction of 2nd order PDE to Canonical form
	Reduction of Hyperbolic equations to its Canonical forms
	Reduction of parabolic equations to Canonical form
	Problems on above
Week 10	Reduction of Elliptic equations to the Canonical form
	Problems on above methods
	Solution of linear Hyperbolic equations
	Problems on above methods
	Test 1
Week 11	Assignment 2 given to students
	Introduction to Monge's method of Partial Differential equation o 2nd order
	Different form of PDE solved by Monge's methods
	Problems on above methods
Week 12	Characteristics of 2nd order partial differential equations
	Problems on above method
	Characteristics equation and characteristic curves
	Problems to find out characteristics equation and curves
	Cauchy's Method of 2 order PD
Week 13	Problems on above methods
	Introduction to Methods of separation of variable
	Wave equations and its solution by method of separation of variables
	Problems on above methods
Week 14	Solution of 1-D wave equations for given boundary and initial conditions
	Solution of 2-D wave equation by separation of variable method
	Problems on above methods
Week 15	Boundary conditions and initial conditions for 1-D heat equation
	2-D Heat equation and its solutions
	Problems on above methods
Week 16	Solution of 2D Laplace equation
	Solution of Laplace equation using boundary conditions
	Problems on above methods