

Name of Teacher – Alpana Sharma
Paper – Algebra
Class – Ba/Bsc I sem

Subject – Mathematics
Session 2020-21

Weeks With Months	Contents
NOV 16-21	Matrix definition symmetric and skew symmetric matrix hermitian and skew hermitian matrices
NOV 23-28	elementary operations on matrices rank of matrix
NOV 30- DEC 5	inverse of matrix linear dependence and independence of row and column of matrices
DEC 7-12	row rank and column rank of matrix
DEC 14-19	eigen value eigen vector and characteristic equation of matrix
DEC 21-26	minimal polynomial of matrix caley Hamilton theorem and it's use in finding the inverse of matrix
DEC 28- JAN 2	application of matrices to a system of linear equations theorems on consistency of a system of linear equations
JAN 4-9	unitary and orthogonal matrices by linear and quadratic forms
JAN 11-16	relation between the roots of and coefficients of general polynomial equation in one variable solutions of polynomial equation having conditions on roots
JAN 18-23	common root and multiple roots .transformation of equations
JAN 25-30	nature of roots of an equation discarte's rule of sign. solutions of cubic equation and by quadratic equation

Name of Teacher – Alpana Sharma
Paper – partial differential equation
Class – BA/Bsc III sem

Subject – Mathematics
Session 2020-21

Weeks With Months	Contents
AUG 4-8	partial differential equation formation : order and degree
AUG 10-15	linear and nonlinear partial differential equation of first order: complete solution singular solution general solution
AUG 17-22	solution of lagrange's linear equation
AUG 24-29	Charpit general method of solution compatible systems of first order equation
AUG 31- SEP 5	jacobi's method linear partial differential equation of second and higher order
SEP 7-12	continue linear partial differential equation of second and higher order
SEP 14-19	linear and nonlinear homogeneous and non homogeneous Equations with constant coefficient
SEP 21-26	partial differential equation with variable coefficients reducible to equation with constant coefficient
SEP 28- OCT 3	complementary function and particular integral of partial differential equation
OCT 5-10	equations reducible to Linear Equations with constant coefficients
OCT 12-17	classification of linear partial differential equation off second order
OCT 19-24	hyperbolic and parabolic type partial differential equation
OCT 26-31	elliptic type partial differential equation
NOV 2-7	reduction of second order linear partial differential equation two Canonical form and their solution
NOV 9-14	Monge's method partial differential equations off second order
NOV 16-21	Monge's method continued
NOV 23-28	Cauchy's problem for second order partial differential equation
NOV 30- DEC 5	characteristic equations and characteristic curves for second order partial differential equation

DEC 7-12	method of separation of variables
DEC 14-19	solution of Laplace Equation
DEC 21-26	wave equation of One dimension and two dimension
DEC 28- JAN 2	continuous wave equation
JAN 4-9	heat equation of One dimension and two dimension in cartesian coordinate system
JAN 11-16	revision
JAN 18-23	revision and test
JAN 25-30	revision

Name of Teacher – Alpana Sharma

Subject – Mathematics

Paper – Real Analysis

Class – BA/Bsc 5th sem

Session 2020-21

Weeks With Months	Contents
AUG 4-8	Remann integral partition, norm of partition, upper integral and lower integral
AUG 10-15	integrability of continuous and monotonic functions
AUG 17-22	Fundamental theorem of integral calculus related examples
AUG 24-29	mean value theorem of integral calculus
AUG 31- SEP 5	related examples and problems
SEP 7-12	improper integral their types and their convergence
SEP 14-19	improper integral of first type and second type
SEP 21-26	comparison test and related examples
SEP 28- OCT 3	Abel's and Drichlet's test
OCT 5-10	Frullani's integral
OCT 12-17	Integral as a function of parameter
OCT 19-24	continuity e differentiability and integrability of a function of a parameter
OCT 26-31	definition and examples of metric space
NOV 2-7	metric space continued
NOV 9-14	neighborhoods, limit points, interior points definition and examples
NOV 16-21	open sets and related theorems
NOV 23-28	closed set and related theorems
NOV 30- DEC 5	closure and interior, boundary points, subspace of metric space
DEC 7-12	equivalent metrics , cauchy's sequence

DEC 14-19	Completeness of metric space, Cantor's intersection theorem
DEC 21-26	Baire's category theorem and contraction principle
DEC 28- JAN 2	continuous function uniform continuity
JAN 4-9	related theorem
JAN 11-16	compactness for metric space sequence
JAN 18-23	Bolzano-Weierstrass theorem total boundedness finite intersection property continuity in relation with compactness
JAN 25-30	revision