Name of Teacher – Dr. Neha Mittal **Subject – Mathematics**

Paper – Solid Geometry

Class –B.A/B.Sc. I year **Session- 2020-21(Odd Semester)**

Weeks With Months	Contents
NOV 16-21	**Unit- 2** Introduction, Sphere, plane section of a sphere, sphere through a given circle
NOV 23-28	Intersection of two spheres, Radical plane of two spheres
NOV 30- DEC 5	Co-axal system of spheres, Cone
DEC 7-12	Right circular cone, enveloping cone, reciprocal cone
DEC 14-19	Cylinder: Right circular cylinder and enveloping cylinder, problem discussion and Assignment-1
DEC 21-26	**Unit-1** General equation of second degree
DEC 28- JAN 2	Tracing of conics, Tangents at any point to the conic, chord of contact, Pole of line to the conic
JAN 4-9	Director circle to the conic, system of conics, confocal conics, Polar equation of a conic, tangent and normal to the conic, Assignment-2
JAN 11-16	**Unit-3** Central Conicoid**s**: Equation of a tangent plane, Director sphere, Normal to the conicoids,
JAN 18-23	Polar plane of a point, Enveloping cone and cylinder of a conicoid, Unit Test, **Unit-4** Paraboloids: Circular section, Plane section of conicoids
JAN 25-30	Generating lines, Confocal conicoid, Reduction of second degree equation, Problems discussion, Revision of Syllabus and Test

Name of Teacher – Dr. Neha Mittal **Subject – Mathematics**

Paper – Advanced Calculus

Class –B.A/B.Sc. II year **Session- 2020-21(Odd Semester)**

Weeks With Months	Contents
AUG 4-8	**Unit- 1** Introduction, Continuity, Sequential continuity
AUG 10-15	Properties of continuous functions, Uniform continuity
AUG 17-22	Chain rule of differentiability, Mean Value theorems
AUG 24-29	Rolle's theorem and Lagrange's mean value theorem and their geometrical interpretations
AUG 31- SEP 5	Taylor's theorem with various form of remainders
SEP 7-12	Darboux intermediate value theorem for derivatives
SEP 14-19	Indeterminate forms, problems discussion and Assignment-1
SEP 21-26	**Unit-2** Limit and continuity of real valued functions of two variables
SEP 28- OCT 3	Partial differentiation
OCT 5-10	Total differentials, composite functions and implicit functions
OCT 12-17	Change of variables, Homogeneous functions
OCT 19-24	Euler's theorem on Homogeneous functions,Taylor's theorem for functions of two variables, Problem discussion, Assignment-2
OCT 26-31	**Unit-3** Differentiablity of real valued functions of two variables
NOV 2-7	Schwarz and Young's theorem, Implicit function theorem
NOV 9-14	Maxima, minima and saddle points of two variables
NOV 16-21	Maxima, minima and saddle points of two variables
NOV 23-28	Lagrange's method of multipliers, Problems discussion, Unit Test
NOV 30- DEC 5	**Unit-4** Curves: Tangents, Principal normals, binormals
DEC 7-12	Serret-Frenet formulae, Locus of the centre of curvature
DEC 14-19	Spherical Curvature, Locus of the centre of spherical curvature

DEC 21-26	Involutes, Evolutes, Bertrand curves, Surfaces: Tangent planes
DEC 28- JAN 2	One parameter family of surfaces, Envelopes
JAN 4-9	Problems discussion, Revision of Syllabus and Test
JAN 11-16	Problems discussion, Revision of Syllabus and Test
JAN 18-23	Problems discussion, Revision of Syllabus and Test
JAN 25-30	Problems discussion, Revision of Syllabus and Test

Name of Teacher – Dr. Neha Mittal **Subject – Mathematics**

Paper – Groups and Rings

Class –B.A/B.Sc. III year **Session- 2020-21(Odd Semester)**

Weeks With Months	Contents
AUG 4-8	**Unit- 1** Introduction and definition of Groups with example,Simple properties of groups
AUG 10-15	Subgroup and subgroup criteria, Generation of group
AUG 17-22	Cyclic group
AUG 24-29	Cosets, Left and Right Cosets
AUG 31- SEP 5	Index of a subgroup, Coset decomposition
SEP 7-12	Lagrange's theorem and its consequences
SEP 14-19	Normal subgroup , Quotient group, Problem discussion and 1st assignment
SEP 21-26	**Unit-2** Homomorphisms, Isomorphisms
SEP 28- OCT 3	Automorphisms and inner automorphisms of a group
OCT 5-10	Automorphisms of a cyclic group
OCT 12-17	Permutation group, Even and odd permutation, Alternating group
OCT 19-24	Cayley's theorem, Centre of a group and derived group of a group, Problem discussion, Assignment-2
OCT 26-31	**Unit-3** Introduction to Rings, Subrings
NOV 2-7	Intergral domain and fields, Characterstic of a Ring
NOV 9-14	Ring homomorphisms
NOV 16-21	Ideals and Quotient Rings
NOV 23-28	Field of quotients of an integral domain, Problem discussion and Unit Test
NOV 30- DEC 5	**Unit-4** Euclidean Ring, Polynomial ring
DEC 7-12	Polunomial over the rational field
DEC 14-19	The Eisenstein's criterian of irreduciblity

DEC 21-26	Polunomial rings over commutative rings, Unique factorization domain
DEC 28- JAN 2	R Unique factorization domain implies so is $R[X_1, X_2, \ldots\ldots X_n]$
JAN 4-9	Problems discussion, Revision of Syllabus and Test
JAN 11-16	Problems discussion, Revision of Syllabus and Test
JAN 18-23	Problems discussion, Revision of Syllabus and Test
JAN 25-30	Problems discussion, Revision of Syllabus and Test