KVA DAV College for Women, Karnal

Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Dr. Shweta Dhawan
Subject- Mathematics
Paper- BM-111 (Algebra)
Class- B.A/B.Sc Ist Year

October, 2021 2rd Week **11 Oct-16 Oct**	• Definition of Different Types of matrices. • Transpose & Transpose conjugate of matrix. • Adjoint of a square matrix • Inverse of a square matrix. • Singular and Non-Singular matrices
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Solution of System of linear equations. Define symmetric & skew-symmetric matrices. Define Hermitian & skew- Hermitian matrices. Properties and examples of matrices. Orthogonal matrix. Unitary matrix.
20 Oct, 2021 **24 Oct, 2021**	**Maharishi Valmiki Jayanti** **Sunday**
4th Week **25 Oct-30 Oct**	Properties of orthogonal & unitary matrices. Define Rank of a matrix. Row Equivalent matrix. Column Equivalent matrix. Row-Echelon matrix.
31 Oct, 2021	**Sunday**
November, 2021 1st Week **1 Nov-7 Nov**	**(Haryana Day)** **Diwali Holidays**
2nd Week	Column- Echelon matrix.

8 Nov-13 Nov	Row rank and column rank of matrix. Reduction of matrix to Triangular form. Define Normal form of a matrix. Examples of normal form. Non-singular matrices in normal form.
14 Nov, 2021	**Sunday**
3rdWeek **15 Nov-20 Nov**	Linear Dependence & Independence of column matrices. Theorems of linear Dependence & Independence. Define characteristic matrix and equation.
21 Nov, 2021	**Sunday**
4thWeek **22 Nov-27**	Define characteristic roots. Spectrum of a matrix Examples related to characteristic roots. Define characteristic vector. Examples related to characteristic vectors.
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Define Scalar Polynominal. Define matrix polynominal. Cayley-Hamilton throrem. Discuss examples of Cayley-Hamilton theorem Some theorems on characteristic roots. Some theorems on characteristic vectors.
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Miminal & Monic Polynomials. Derogatory & Non-Derogatory Matrices. System of Non-Homogeneous Linear equations. System of Homogeneous Linear equations..
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Method to write matrix of Bilinear form. Method to write matrix of Quadratic form. Diagonalization of a quadratic form. Discuss index, signature & Rank of quadratic form. Positive definite & Semi-definite form. Negative definite & Semi- definite form.
19 Dec,2021	**Sunday**

4th Week **20 Dec-24 Dec**	Sylvester's Criterion for positive definiteness. Remainder & factor theorem for roots. Synthetic Division with examples. Fundamental theorem of Algebra. Rational & Irrational Roots. Common Roots
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Equal roots of an equation. Multiple roots of an equation. Roots with signs changed Roots multiplied by a given number.
2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Reciprocal roots and reciprocal equation. Roots diminished by a given number. Transformation of the Cubic equation. Transformation of the biquadratic equation.
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**

2nd week **10 Jan – 15 Jan**	Equations of squared differences of a cubic. Discuss, equations of diminishing by a root. Cardan's Method.
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Discuss nature of roots of cubic equation. Irreducible cases of Cardan's method. Examples of cardan's method
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Descarte's solution of the Biquadratic equations. Discuss Discarte's examples Define Ferrari's method.
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1st week **1 Feb-4 Feb**	Define Ferrari's method. Working rule for Ferrai's method
5 Feb, 2022	**Vasant Panchmi**

6 Feb ,2022	**Sunday**
2nd week **7 Feb- 12 Feb**	Examples of Ferrari's method. Continuation & permanence of signs Descarte's rule of Sign
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	**Revision**

Name of the Teachers : Dr Manju Sharma

Subject: Mathematics

Paper:- Calculus Class: B.sc. I

WEEK	**DATE**	
1	October (6 - 9)	Orientation
		HOLIDAY - 07.10.2021 - Maharaja Agarsen Jayanti
		Discuss Program outcomes and course outcomes with students
		Derivative of a Function
SUNDAY - 10.10.2021		
2	October (11-16)	Basics of Differentiation and Integration
		Basics of Differentiation and Integration
		Successive Differentiation
		Questions based on Successive Differentiation
		HOLIDAY - 15.10.2021 - DUSSEHRA
		Questions based on Successive Differentiation
SUNDAY - 17.10.2021		
3	October (18-23)	Differentiation of Parametric Functions
		Differentiation of Parametric Functions
		Holiday - 20.10.2021 - Maharishi Valmiki Jayanti

5	**November (8 -13)**	Problem Discussion
		Test
		Taylor's Theorem with Lagrange's form of remainder Questions based on Taylor's Theorem
		Questions based on Taylor's Theorem
		Taylor's Theorem with Cauchy's form of remainder Questions based on Taylor's Theorem with Cauchy's form of remainder
		Taylor's Theorem with Cauchy's form of remainder Questions based on Taylor's Theorem with Cauchy's form of remainder
SUNDAY - 14.11.2021		
6	**November (15 -20)**	Infinite Series
		Infinite Series
		Infinite Series
		Infinite Series
		Holiday -19.11.2021 - Guru Nanak Dev Jayanti
		Applications of Taylor's Series
SUNDAY - 21.11.2021		
7	**November (22-27)**	Applications of Taylor's Series
		Applications of Taylor's Series
		Applications of Taylor's Series

		Problem Discussion
		Expansion by Differential Equations
		Expansion by Differential Equations
SUNDAY - 28.11.2021		
8	**November (29-30) December (1-4)**	Problem Discussion
		Test
		Asymptotes
		Oblique Asymptotes and Questions based on it
		Oblique Asymptotes and Questions based on it
SUNDAY - 5.12.2021		
9	**December (6-11)**	Oblique Asymptotes of Algebraic Curve
		Oblique Asymptotes of Algebraic Curve
		Oblique Asymptotes of Algebraic Curve
		Intersection of Curve and its Asymptotes
		Intersection of Curve and its Asymptotes
		Intersection of Curve and its Asymptotes
SUNDAY - 12.12.2021		
10		Polar Asymptotes

	December (13-18)	Polar Asymptotes
		Polar Asymptotes
		Polar Asymptotes
		Problem Discussion
		Test
SUNDAY - 19.12.2021		
11	**December (20-25)**	Curvature
		Articles related to Curvature
		Questions based on Curvature
		Questions based on Curvature
		Questions based on Curvature
		Questions based on Curvature
SUNDAY - 26.12.2021		
12	**December (27-31)**	Radius of Curvature in Polar Form
		Radius of Curvature in Polar Form
		Curvature at Origin
		Centre of Curvature and Evolute of a Curve
		Centre of Curvature and Evolute of a Curve
	January (1)	Centre of Curvature and Evolute of a Curve

SUNDAY -02.01.2022		
13	**January (3-8)**	Curve Tracing
		Curve Tracing
		Curve Tracing
		Curve Tracing Parametric Equations
		Curve Tracing Parametric Equations
		Tracing of Polar Curves
SUNDAY - 09.01.2022		
14	**January (10-15)**	Tracing of Polar Curves
		Problem Discussion
		Test
		Reduction Formulae
		Articles related to Reduction Formulae
		Articles related to Reduction Formulae
SUNDAY - 16.01.2022		
15	**January (17-22)**	Questions based on Reduction Formulae
		Questions based on Reduction Formulae
		Questions based on Reduction Formulae

		Questions based on Reduction Formulae
		Problem Discussion
		Test
SUNDAY - 23.01.2022		
16	**January (24-29)**	Rectification, Fundamental Theorem about Rectification
		Rectification, Fundamental Theorem about Rectification
		Holiday - 26.01.2022 - Republic day
		Rectification, Fundamental Theorem about Rectification
		Rectification, Fundamental Theorem about Rectification
		Problem Discussion
SUNDAY - 30.01.2022		
17	**January(31)**	Test
	February (1-4)	Length of Parametric Curves
		Length of Parametric Curves
		Length of Parametric Curves
		Length of Polar Curves
Holiday - 05.02.2022 - Vasant Panchami		
SUNDAY - 6.02.2022		
18	**February (7-12)**	Length of Polar Curves
		Length of Polar Curves
		Intrinsic Equation of a Curve
		Quadrature
		Quadrature

		Questions based on Quadrature
		SUNDAY - 13.02.2022
19	**February (14-19)**	Problem discussion
		Test
		Revision
		Revision
		Revision
		Revision
		SUNDAY - 20.02.2022
20	**February (21-22)**	Revision
		Test

Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms. MEENU KALRA
Subject- MATHEMATICS
Paper-SOLID GEOMETRY
Class:- B.A/B.Sc. SEM I

October, 2021 1st Week **06Oct-09Oct**	General Equation of second degree,conic sections,classification To find the centre,length and equation of axes of central conic
10 October,2021	**Sunday**
October, 2021 2rd Week **11 Oct-16 Oct**	To find foci,directrix of the conic To find the axis,latus rectum and tangent at the vertex of the parabola To find the equation of director circle Continued….
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Tracing of conics Tangents at the point to the conic Chord of contact Pole of line to the conic Director circle of conic System of conics,confocal conics
20 Oct, 2021 **24 Oct, 2021**	**Maharishi Valmiki Jayanti** **Sunday**
4th Week **25 Oct-30 Oct**	Polar equation of conic. Tangent and normal to the conic Continued…. Sphere:plane section of sphere,sphere through a given circle Continued….
31 Oct, 2021	**Sunday**
November, 2021 1st Week	**(Haryana Day)**

1 Nov-7 Nov	**Diwali Holidays**
2nd Week **8 Nov-13 Nov**	Intersection of two spheres,Coaxal system of spheres. Cones:Right circular cone,enveloping cone Continued….
14 Nov, 2021	**Sunday**
3rdWeek **15 Nov-20 Nov**	Student Problems Revision TEST
21 Nov, 2021	**Sunday**
4thWeek **22 Nov-27**	Cylinder:Right circular cylinder Enveloping cylinder Continued with examples and exercises Continued Continued…
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Central conicoids:Equation of tangent plane Equation of director sphere with examples Normal to the conicoids… Continued..
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Polar plane of a point Enveloping cone of a conicoids Enveloping cylinder of a conicoid Continued….
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Continued conicoid with examples. Continued conicoids with exercises

	Revision & Test
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Introduction to paraboloids Paraboloids:circular section Discuss paraboloids with examples Discuss paraboloids with exercise
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Plane section of conicoids Continued examples Continued exercises Continued
2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Generating lines and its properties Continued properties Continued examples of generating lines Continued exercises Confocal conicoids:introduction to confocal conicoids Continued
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Discuss results with examples Continued examples Continued examples
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Continued exercises Revision and tests. Revision and tests.
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Reduction of second degree equations Students problems Questions

26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1st week **1 Feb-4 Feb**	Discuss the properties and their nature Class discussion Student problems
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Discuss about their standard forms Student problems
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	Class Discussion Revision

Teaching Term : (06.10.2021 to 22.02.2022) **(Odd Semester)**

Name of the Paper:- Advanced Calculus **Class: B.A/B.ScII**

Name of the Teacher : Dr. Manju Sharma

WEEK	DATE	
1	October (6 - 9)	Discuss Program outcomes and Course outcomes.
		HOLIDAY - 07.10.2021 - Maharaja Agarsen Jayanti
		Basic concepts
		Basic concepts
SUNDAY - 10.10.2021		
2	October (11-16)	Continuous Function, Discontinuous function
		Theorems based on continuous function
		Properties of continuous Function
		continue
		HOLIDAY - 15.10.2021 - DUSSEHRA
		Open sets and closed sets
SUNDAY - 17.10.2021		
3	Octob	Theorems on open and closed sets
		Intermediate value theorem
		Holiday - 20.10.2021 - Maharishi Valmiki Jayanti

5	**November (8 -13)**	Derivability of a function, Chain rule
		Related questions
		Darboux theorem and related que.
		Rolle's theorem and its geometrical interpretation
		Related questions
		continue
SUNDAY - 14.11.2021		
6	**November (15 -20)**	Lagrange's Mean Value Theorem and its geometrical interpretation
		Related questions
		Cauchy Mean Value Theorem
		Related questions
		Holiday -19.11.2021 - Guru Nanak Dev Jayanti
		Taylor's Theorem
SUNDAY - 21.11.2021		
7	**November (22-27)**	Related questions
		Problem solving session
		Intermediate Form
		Intermediate Form
		Intermediate Form
		Intermediate Form
SUNDAY - 28.11.2021		
8	**November (29-30) December (1-4)**	Intermediate Form
		Intermediate Form
		Problem Discussion
		Test
		Limit, Continuity of functions of Two variables
		Limit, Continuity of functions of Two variables
SUNDAY - 5.12.2021		
9	**December (6-11)**	Limit, Continuity of functions of Two variables
		Limit, Continuity of functions of Two variables
		Problem solving session
		Test
		Partial Differentiation
		Related problems
SUNDAY - 12.12.2021		
10	**December (13-18)**	Homogeneous functions and Euler's theorem on homogeneous functions
		Related problems and theorems
		Total differentials
		Composite functions and implicit functions
		Change of variable
		Related problems
SUNDAY - 19.12.2021		

11	**December (20-25)**	Differentiation of implicit functions
		Related problems
		Taylor's theorem
		Related theorems
		Problem solving session
		Holiday -25.12.2021 - Christmas
SUNDAY - 26.12.2021		
12	**December (27-31)**	Test
		Differentiability of functions of two variables
		Related problems
		Sufficient condition for differentiability
		Related problems
	January (1)	Young's theorem
SUNDAY -02.01.2022		
13	**January (3-8)**	Schwarz's theorem
		Related problems
		Implicit function and Implicit function theorem
		Related problems
		Problem solving session
		Test
SUNDAY - 09.01.2022		
14	**January (10-15)**	Maxima and Minima of Functions of two variables
		Related theorems
		Related problems
		Related problems
		Problem solving session
		Lagrange's method of undetermined multipliers
SUNDAY - 16.01.2022		
15	**January (17-22)**	Maxima and Minima of Functions
		Related problems
		Problem solving session
		Curve in space
		Curve in space
		Curve in space
SUNDAY - 23.01.2022		
16	**January (24-29)**	Curve in space
		Curve in space
		Holiday - 26.01.2022 - Republic day
		Curve in space
		Circle of Curvature and Spherical Curvature
		Circle of Curvature and Spherical Curvature
SUNDAY - 30.01.2022		

17	January(31)	Circle of Curvature and Spherical Curvature
	February(1-4)	Circle of Curvature and Spherical Curvature
		Circle of Curvature and Spherical Curvature
		Circle of Curvature and Spherical Curvature
		Problem Discussion
Holiday - 05.02.2022 - Vasant Panchami		
SUNDAY - 6.02.2022		
18	February (7-12)	Test
		Involutes and Evolutes
		Involutes and Evolutes
		Involutes and Evolutes
		Involutes and Evolutes
		Concept of Surfaces and Envelopes
		SUNDAY - 13.02.2022
19	February (14-19)	Concept of Surfaces and Envelopes
		Concept of Surfaces and Envelopes
		Concept of Surfaces and Envelopes
		Problem Discussion
		Revision
		Revision
		SUNDAY - 20.02.2022
20	February (21-22)	Revision
		Revision

Teaching Term : (06.10.2021 to 22.02.2022) **(Odd Semester)**
Weekly Lesson Plan UG (IIIrd Semester)
Name of the Paper:- PARTIAL DIFFERENTIAL EQUATION **Class: B.A/B.Sc 2nd Year**
Name of the Teacher Dr. Shweta Dhawan

WEEK	DATE	
1	October (6 - 9)	Intraction With students
		HOLIDAY - 07.10.2021 - Maharaja Agarsen Jayanti
		Discuss Programme outcomes and Course outcomes
		Basic about differential equation

Sunday - 10.10.2021		
2	**October (11-16)**	Basic about differential equation
		Basic about differential equation
		Partial differential equation
		Types of differential equation
		Holiday - 15.10.2021 - dussehra
		Some important results and formulae
SUNDAY - 17.10.2021		
3	**October (18-23)**	Order and degree
		Linear and non linear partial differential equation of first order
		Holiday - 20.10.2021 - maharishi valmiki jayanti
		Complete solution
		Singular solution, general solution
		Continue
Sunday - 24.10.2021		
4	**October (25 -30)**	Examples
		Examples
		Solution of lagranges linear equation
		Examples
		Examples
		Continue
VACATIONS: 31.10.2021 to 07.11.2021 - DIWALI BREAK		
5	**November (8 -13)**	Charpit general method of solution
		Examples
		Examples
		Compatible system of first order
		Examples
		Examples
Sunday - 14.11.2021		
6	**November (15 -20)**	Jacobis method
		Examples
		Examples
		Doubts
		Holiday -19.11.2021 - guru nanak dev jayanti
		Class test
Sunday - 21.11.2021		

7	**November(22-27)**	Linear partial differential equation of second and higher order
		Examples
		Examples
		Examples
		Linear homogenous equation
		Examples
SUNDAY - 28.11.2021		
8	**November(29-30) December(1-4)**	Non linear homogenous equation
		Examples
		Examples
		Examples
		Partial differential equation with constant coefficients
		Examples
Sunday - 5.12.2021		
9	**December(6-11)**	Examples
		Examples
		Examples
		Equation reducible with constant coefficients
		Complimentary equation
		Examples
Sunday - 12.12.2021		
10	**December(13-18)**	Examples
		Particular integrals
		Examples
		Examples
		Examples
		Examples
Sunday - 19.12.2021		
11	**December(20-25)**	Equation reducible to linear equation with constant coefficients
		Examples
		Examples
		Doubts
		Class test
		Holiday -25.12.2021 - christmas
Sunday - 26.12.2021		
	December(27-	Classification of linear partial differential equation of second
		Continue
		Examples

12	**31)**	Examples
		Examples
	January (1)	HYPERBOLIC EQUATION
Sunday -02.01.2022		
13	**January(3-8)**	Examples
		Examples
		Examples
		Parabolic equation
		Examples
		Examples
Sunday - 09.01.2022		
14	**January(10-15)**	Examples
		Elliptic type equation
		Examples
		Examples
		Examples
		Examples
Sunday - 16.01.2022		
15	**January(17-22)**	Reduction of second order linear p.d.e into canonical form
		Examples
		Examples
		Examples
		Examples
		Examples
SUNDAY - 23.01.2022		
16	**January(24-29)**	Solution of linear hyperbolic equation
		Monges method
		Holiday - 26.01.2022 - Republic day
		Examples
		Examples
		Doubts
Sunday - 30.01.2022		
17	**January(31)**	Cauchy problem for second order
	February(1-4)	Examples
		Examples
		Examples
		Characterstic equation and characterstic curve

Holiday - 05.02.2022 - vasant panchami		
Sunday - 6.02.2022		
18	**February(7-12)**	Examples
		Method of seperation of variables of laplace equation
		Examples
		Examples
		Examples
		Examples
		SUNDAY - 13.02.2022

19	**February(14-19)**	Wave equation in oneand two dimensions
		Examples
		Examples
		Heat equation in one and two dimensions
		Examples
		Examples
		Sunday - 20.02.2022
20	**February(21-22)**	Doubts
		Class test

Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms. MEENU KALRA
Subject- MATHEMATICS
Paper- STATICS
Class-B.Sc. Sem 3

October,2021 **1st Week** **06Oct-09 Oct**	Forces acting at a point Resultant and its components,Magnitude and direction of its resultant Resolved parts of a force Questions Triangle law of vectors

	Questions
10 October,2021	**Sunday**
October, 2021 2rd Week **11 Oct-16 Oct**	Lamda mew theorem Lami's theorem Questions based on Lami's Theorem
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Conditions of equilibrium of concurrent forces Revision
20 Oct, 2021 **24 Oct, 2021**	**Maharishi Valmiki Jayanti** **Sunday**
4th Week **25 Oct-30 Oct**	Equilibrium of bodies placed on a smooth inclined planes Parallel forces Resultant of two like and unlike parallel forces acting on a rigid body
31 Oct, 2021	**Sunday**
November, 2021 1st Week **1 Nov-7 Nov**	**(Haryana Day)** **Diwali Holidays**
2nd Week	Questions

8 Nov-13 Nov	Questions
14 Nov, 2021	**Sunday**
3rdWeek **15 Nov-20 Nov**	Continued…. Analogue of lami's theorem Questions based on analogue of lami's theorem Continued..
21 Nov, 2021	**Sunday**
4thWeek **22 Nov-27**	Introduction to moments Definition of moments Varignon's Theorem-when the forces acting at a point When the forces are parallel Moment of a force about a line Continued…

28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Questions based on moments. Introduction to couples Moment of a couple,Sign of a moment of a couple Continued
05 Dec, 2021	**Sunday**

2nd Week **06 Dec -11 Dec**	Equilibrium of two couples Continued Questions
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Analytical conditions of equilibrium of coplanar forces Equilibrium of three forces acting at a point Questions Continued
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Trignometrical Theorem Continued…. Questions
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Forces which may be omitted in forming the equation of virtual work Questions Continued

2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Forces in three dimensions Prallelopied law of forces Questions Axis of couple Questions
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**

2nd week **10 Jan – 15 Jan**	Conditions of equilibrium of a rigid body Questions Continued Poinsot's central axis Questions
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Condition in order that a general system of forces in space reduce to a single Force. Equation of central axis Conditions of equilibrium of any no. of coplanar forces Friction:Introduction Force of friction,coefficient of friction Continued
23 Jan ,2022	**Sunday**

4th Week **24 Jan – 29 Jan**	Angle and cone of friction Questions Continued Problems on equilibrium of rods and ladders Continued Centre of gravity: C.G. of a uniform rods,C.G. of uniform lamina in form of a parallelogram Questions
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1st week **1 Feb-4 Feb**	C.G. of a thin uniform triangular lamina Questions C.G. of right circular solid cone Questions Virtual work Principle of virtual work Introduction to wrenches Resultant wrench of two given wrenches Questions
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Find the locus of the central axis,if pitches are given Null lines and null planes Find the null point of the plane for the system of forces Find the condition that straight line may be a null line Questions Stable,Unstable and neutral equilibrium

	Questions
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	Conditions of stability of equilibrium REVISION

Teaching Term : (06.10.2021 to 22.02.2022) **(Odd Semester) VTH SEMESTER**

Name of the Paper:-Real Analysis **Class: B.A./B.Sc**
Name of the Teachers : Dr. Manju Sharma

WEEK	DATE	
1	**October (6 - 9)**	Discuss Program outcomes
		HOLIDAY - 07.10.2021 - Maharaja Agarsen Jayanti
		Discuss course outcomes
		ORENTATION
SUNDAY - 10.10.2021		
2	**October (11-16)**	Basic concepts
		Introduction to riemann integral
		Definition if partition,norm, refinement ,upper sum and lower sums
		Theorem based on lower sum and upper sum ,oscillatory sum
		HOLIDAY - 15.10.2021 - DUSSEHRA
		Doubt clearing session
Sunday - 17.10.2021		
3	**October (18-23)**	Upper integral and lower integral
		Riemann integral and examples based upon integral function
		Holiday - 20.10.2021 - Maharishi Valmiki Jayanti
		Class test
		Related problems
		Theorem based upon integrability ,darboux 's theorem
Sunday - 24.10.2021		
4	**October(25-30)**	Conditions of integrability
		Integrability of continuous functions
		Some theorem and examples
4	**October (25 -30)**	
		RELATED PROBLEMS
		INTEGRABILITY OF MONOTONIC FUNCTIONS

		Diwali Break(31.10.2021 to 07.11.2021)
5	November(8 -13)	Mean value theorem of integral calculus and examples
		Related problems
		Revision of chapter 1
		Class test
		Assignment 1
		Introduction to improper integrals
Sunday - 14.11.2021		
6	November(15 - 20)	Introduction to improper integrals
		Improper integrals and their types & their convergence
		Examples and exercise
		Camparision tests and examples based on comparision tests
		Holiday -19.11.2021 - guru nanak dev jayanti
		Related problems
Sunday - 21.11.2021		
7	November(22-27)	Abel's and drichlet's test
		Related problems
		Class test
		Related problems
		Frullani's integral
		Related problems
SUNDAY - 28.11.2021		
8	November(29-30) December(1-4)	Introduction to integral as a function of a parameter
		Continuity of the integral,differentiability of the integral,
		Examples
		Related problems
		Doubt clearing session
		Class test
SUNDAY - 5.12.2021		
		Introduction to metric spaces
		Examples based upon different types of metric spaces
		Bounded sequence ,bounded function

9	December (6-11)	Induced metric
		Pseudo metric spaces and examples based on it
		Distance between point and subset, diameter of a subset
SUNDAY - 12.12.2021		
10	December (13-18)	Distance between two sets
		Bounded and unbounded metric spaces and examples
		Related problems
		Doubt clearing session
		Test
		Introduction to neighbourhood, interior points
SUNDAY - 19.12.2021		
11	December (20-25)	Introduction to limit point
		Introduction to open sets
		Theorem based on limit point
		Theorem based on open set
		Theorem based on interior point
		Holiday -25.12.2021 - Christmas
SUNDAY - 26.12.2021		
12	December (27-31)	Closed sets,closure
		Interior of a set,boundary points
		Theorem based upon closed set
		Theorem based upon boundary point
		Revision and problems
	January (1)	Derived set
SUNDAY -02.01.2022		
13	January (3-8)	Exterior of a sets
		Theorem based upon exterior sets
		Examples
		Related problems
		Sequences in metric spaces , convergence in a metric space
		Theorem based upon sequences in metric spaces , convergence in a metric space

SUNDAY - 09.01.2022		
14	January(10-15)	Cauchy sequence , complete metric space and examples
		Theorem based upon complete metric spaces
		Completeness of r
		Cantor's intersection theorem
		Converse of cantor's intersection theorem
		Nowhere dense set , definition of first category and second category space
SUNDAY - 16.01.2022		
15	January(17-22)	Baire 's category theorem
		Contraction principle in a metric space
		Fixed point ,banach's fixed point theorem
		Related problems
		Doubts and quick revision of chapter 6
		Class test
SUNDAY - 23.01.2022		
16	January(24-29)	Test of section 2
		Continuous function in metric spaces
		Holiday - 26.01.2022 - Republic day
		Examples, theorems based upon continuity in metric spaces
		Uniform continuity in metric spaces
		Examples based upon u.c.
SUNDAY - 30.01.2022		
17	January(31)	ISOMETRY AND SOME MAPPINGS
	February(1-4)	Examples
		Related problems
		Test
		Definitions of covers , examples
Holiday - 05.02.2022 - Vasant Panchami		
SUNDAY - 6.02.2022		

18	February (7-12)	Definitions of covers , examples
		Bolzano weierstrass property (bwp)
		Seqentially compact metric space
		Theorem based upon sequentially compact metric space
		Finite intersection property (fip)
		Epsilon net and total boundedness
		SUNDAY - 13.02.2022
19	February (14-19)	Related problems
		Connected sets,separated sets ,disconnected sets
		Theorem based upon separated sets ,connected and disconnected sets
		Theorem based upon separated sets ,connected and disconnected sets
		Components
		Continuity and connectedness
		SUNDAY - 20.02.2022
20	February (21-22)	Doubt clearing session
		Doubt clearing session

Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Dr. Shweta Dhawan
Subject- Mathematics
Paper- BM-352
Class- B.A /B.Sc (III)

October, 2021 2rd Week **11 Oct-16 Oct**	Binary operation, properties of binary operation, Definition of GROUP, SemiGroup, Finite and Infinite Group, Order of a Group , Examples based on Group, Examples continued, General properties of Groups, Cancellation Laws, Examples, Order of an element of a Group, Theorems based on order of an element of a Group , Theorems and Examples based on order of an element of a Group.

15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Complexes And subgroups of a Group,Definition of Subgroup,Theorems based on Subgroup , Theorems continued and Examples based on subgroup of a Group, Cyclic Groups,Some theorems on Cyclic Group, Examples based on Cyclic Group,Definition of a Coset of a Group, Definition of Right Coset and Left Coset of a Group,Theorems on Cosets , Examples based on Coset,Definition of index of a subgroup in a Group.
20 Oct, 2021 **24 Oct, 2021**	**Maharishi Valmiki Jayanti** **Sunday**
4th Week **25 Oct-30 Oct**	Langrange's Theorem, Some other theorems based on order of an element, test of Group, Subgroup and Cosets, Definition Of Normal Subgroup, Simple Subgroup, Some Theorems On Normal Subgroup , Definition of Quotient Group,Theorems on Quotient Groups, GROUP DISCUSSION ON Group, Subgroup, Coset, Normal Subgroup, Quotient Group.
31 Oct, 2021	**Sunday**
November, 2021 1st Week **1 Nov-7 Nov**	 **(Haryana Day)** **Diwali Holidays**
2nd Week **8 Nov-13 Nov**	Homomorphisms Of Groups,Isomorphisms Of Groups, Isomorphic Groups, Some Theorems On Homomorphisms, Examples Based On Homomorphisms Definition Of Kernel Of Homomorphisms And Examples Based On Kernel Of Homomorphisms Of Groups , Fundamental Theorems Of Homomorphisms Of Groups, Second Theorem Of Isomorphisms , Third Theorem Of Isomorphisms, Defintion Of Automormorphisms Of Groups, Examples Based On Automorphisms OF A Group , Definition Of Inner Automorphisms, Examples Based On Inner Automorphisms

14 Nov, 2021	**Sunday**
3rdWeek **15 Nov-20 Nov**	Definition Of Inner Automorphisms, Examples Based On Inner Automorphisms , Group Of Automorphisms Of A Cyclic Group, Examples Based On Cyclic Groups, Definition Of Centre Of A Group, Examples And Theorems Based On Centre Of A Group, Definition Of Normalizer Of An Element, Theorems Based On Normalizer And Centralizer Of An Element Of A Group
21 Nov, 2021	**Sunday**
4thWeek **22 Nov-27**	AUTOMORPHISM OF A GROUP - CONTINUED Theorems Continued , Conjugate Subgroup, Commutator Subgroup, Theorems Based On Commutator Subgroup , Revision Of Homomorphisms, Isomorphisms And Automorphisms , Group Discussion On Normal Subgroup, Simple Group And Quotient Group, Test Of Homomorphisms, Isomorphisms And Automorphisms ,
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	PERMUTATION GROUPS Definition Of Permutation, Equality Of Permutation, Composition Of Two Functions, Examples Based On Composition Of Two Functions , Identity Permutation, Inverse Of A Permutation, Permutation Group, Cyclic Permutation Of A Group, Examples Based On Cyclic Permutation, Transposition, Disjoint Cycles , Examples Based On Disjoint Cycles, Even And Odd Permutations , Alternating Group, Centre Of Permutation Of A Group, Cayley Theorem, Group Discussion On Permutation Groups
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	RINGS AND FIELDS

	Definition Of Ring And Types Of Rings, Examples, Rings With Or Without Zero Divisors, Definition Of Integral Domain, Skew Field And Field, Theorems Based On Integral Domain, Skew Field And Field , Examples Based On Integral Domain, Skew Field And Field , Examples Continued, Definition Of Subrings
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	SUBRINGS Definition Of Subrings And Theorems Based On Subrings , Centre Of A Ring And It's Theorems, Examples , Characteristics Of A Ring And Theorems On Characteristics Of A Ring , Group Discussion On Ring, Subring, Integral Domain, Skew Field And Field , Test Of Ring And Subring , Test Of Field, Subfields And Integral Domain
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	IDEALS AND QUOTIENT RINGS Definition Of Ideals,Examples Of Ideals,Sum Of Two Ideals,Ideal Generated By A Set, Product Of Two Ideals, Theorems On Ideals,Definition Of Principal Ideal,Unity Ideal,Maximal Ideal,Theorems Based On It, Theorems Continued , Examples Based On Principal Ideal, maximal IdealAnd Prime Ideal, Examples Continued,Definition Of Quotient Ring And Its Examples., Definition Of Ring Homomorphism, Examples And Theorems Based On It, Definition Of Ring Isomorphism
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	HOMOMORPHISM OF RINGS Kernel Of A Ring Homomorphism, Theorems Based On Kernel And Examples, Fundamental Theorem Of Ring Homomorphism, First Theorem Of Isomorphism., Second Theorem Of Isomorphism, Examples Based On Ring Isomorphism, Embedding Of Rings,Embedded Ring, Set Of Quotient Of A Ring,Theorem On Embedded Ring , Theorems Continued On Embedded Ring And Examples Based On It., Test Of Topic Ideals And Quotient Rings.

2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	EUCLIDEAN RINGS: Divisibility In A Commutative Ring,Unit Element,Theorems Based On Unit Element,Associates , Prime Element,Irreducible Elements,Gaussian Integers,Greatest Common Divisor,Least Common Multiple, Theorems Based On L.C.M And G.C.D,Euclidean Domain And Its Theorems , Principal Ideal Domain And Its Theorems, Theorems Continued And Examples
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**

2nd week **10 Jan – 15 Jan**	POLYNOMIAL RINGS: Group Discussion On Euclidean Ring,Euclidean Domain,G.C.D,L.C.M, Polynomial Rings,Degree Of A Polynomial, Polynomial Over A Ring, Embedding Of R Into R[X], Polynomials Over An Integral Domain, Theorems Based On Integral Domain, Polynomial Over A Field and Theorems Based On It, Ring Of Polynomials In N Variables Over An Integral Domain,Divisibility Of Polynomials Over A Field,
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	POLYNOMIAL RINGS CONTINUED: Divisor,Unit Element,Associates,Proper And Improper Divisors,Reducible And irreducible Element , G.C.D,Relatively Prime, Algorithm For R[X], Remainder Theorem., Theorems And Examples Based On Principal Ideal Domain Definition Of Unique Factorization Domain And Theoems Based On U.F.D.
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Theorems Continued, Lemma Of Ascending Chain Of Ideals , Primitive Polynomials, Irreducible Polynomials, Gauss Lemma, Converse Of Gauss Lemma ,Theorems On Units Of R And R[X], Theorems Based On Irreducible Elments In R[X] , Field Of Quotients Of A U.F.D., Theorems And Lemma Based On It, Eisenstein's Irreducibility Criterion, Test Of Polynomial Rings

26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1st week **1 Feb-4 Feb**	Revision
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Revision
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	**Revision**

Name of the Teacher – MS.SILKY PURI
Subject- MATHEMATICS
Paper- BM-353(NUMERICAL ANALYSIS)
Class- B.SC./B.A.5TH SEM

October, 2021 2rd Week **11 Oct-16 Oct**	Finite difference operators,finding the missing terms and effect of errors in a difference tabular values.
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Interpolation with equal and unequal intervals.Newton's forward interpolation formula.newton's Backward interpolation formula.
20 Oct, 2021	**Maharishi Valmiki Jayanti**

24 Oct, 2021	**Sunday**
May, 2021 4th Week **25 Oct-30 Oct**	Newton's divided difference.Lagrange's interpolation formula.Hermite's formula**.**
31 Oct, 2021	**Sunday**
November, 2021 1st Week **1 Nov-7 Nov**	**(Haryana Day)** **Diwali Holidays**
2nd Week **8 Nov-13 Nov**	Central difference operators,Gauss forward interpolation formula ,Gauss backward interpolation formula.Sterling formula,Bessel's formula.
14 Nov, 2021	**Sunday**
3rdWeek **15 Nov-20 Nov**	Numerical differentiation,probability distribution of random variable.
21 Nov, 2021	**Sunday**
4thWeek **22 Nov-27**	Binomial distribution,poisson's distribution,normal distribution.
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Mean ,variance and fitting.introduction to eigen values problems.
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Power method ,jacobi's method,given's method,House holder method.

12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	QR method,lanczo's method.
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Numerical integration .Numerical cote's quadrature formula.
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Trapezoidal rule,simpson's one third rule and three eight rule.
2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Chebyshev formula and Gauss quadrature formula.
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd Week **10 Jan – 15 Jan**	Numerical solution of ordinary differential equations,single step method :picard method,taylor's method.
16 Jan ,2022	**Sunday**

3rd week **17 Jan – 22 Jan**	Euler's method ,Runga –kutta method .Multistep method:predictor-corrector method.
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Milne's simpson methods and its questions.
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1st week **31 Feb-4 Feb**	Revision and tests.

5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Revision and tests.
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	Sessional

Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms. Meenu Kalra
Subject- Mathematics
Paper- Business Mathematics
Class- B.Com. I

October, 2021 1st Week **06Oct-09 Oct**	Sequence and types of sequence. Arithmetic Progression (A.P.) and related examples. Representation of terms in A.P. and examples. Questions
10 Oct.,2021	**Sunday**
October, 2021 2rd Week **11 Oct-16 Oct**	Sum of 'n' terms of an A.P. and examples Arithmetic Means Geometric means(G.P.) Examples
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Sum of a G.P. upto infinity Geometric means Examples Application of A.P. and G.P. to business Mathematics Examples
20 Oct, 2021	**Maharishi Valmiki Jayanti**

24 Oct, 2021	**Sunday**
4th Week **25 Oct-30 Oct**	Algebra of matrices Examples Basic operations on matrices Multiplication of matrices Examples
31 Oct, 2021	**Sunday**
November, 2021 1st Week **1 Nov-7 Nov**	**(Haryana Day)** **Diwali Holidays**
2nd Week **8 Nov-13 Nov**	Examples Positive integral power of matrices Transpose of a matrix Examples Determinants Examples
14 Nov, 2021	**Sunday**
3rdWeek **15 Nov-20 Nov**	Minor and cofactors Properties of determinants Examples Continued…
21 Nov, 2021	**Sunday**

4thWeek **22 Nov-27**	Adjoint of a matrix Examples Inverse of a square matrix Examples

28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Examples Inverse of a square matrix using Elementry operations Solution of system of equations by using elementary operations Examples
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Solution of system of equations by using Cramer's Rule Solution of system of linear equations using Matrices Application of matrix in particular problems Examples
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Examples Class Discussion Student problems Class Test & Problems
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Compound Interest Simple interest and related examples General formula for determination of compound interest Examples Examples
25 Dec,2021	**Christmas**

26 Dec,2021	**Sunday**
5th Week **27 Dec -01 Jan**	Continuous Compounding of intrest Problem on effective rate of interest Examples Continued…
2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Differentiation Derivative using first principle General theorems on Differentiation Examples Differentiation of products of two function Differentiation using chain rule method Examples
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Differentiation of logarithmic and exponential functions Examples Logarithmic Differentiation Examples Differentiation of parametric functions Derivative of higher order Examples
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Maxima and minima Examples Second derivative test for finding local maxima and minima Examples

23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Absolute maxima and absolute Minima Problems on maxima and minima Examples Optimization of economic functions Examples
26 Jan, 2022 **30 Jan ,2022**	Republic Day Sunday
Feb, 2021 1st week **1 Feb-4 Feb**	Logarithms Examples Product and quotient formula for logarithms Examples
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Two system of logarithms Tables of logarithms Examples Annuity and related examples Present value of an annuity and examples Solution of particular Problems EXAMPLES
13 Feb ,2022	Sunday
3rd week **14 Feb- 19 Feb**	REVISION

Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms.SILKY PURI
Subject- MATHS
Paper-BBA-104
Class- BBAI(SEM I)

October, 2021 2rd Week **11 Oct-16 Oct**	Sets theory:representations of sets.types of sets.different operations of a set.venn diagrams.practicle applications of sets.
15 Oct, 2021 **17 Oct, 2021**	(Dussehra) Sunday
3th Week **18 Oct-23 Oct**	Logical statement and truth tables:truth tables,compound statements.
20 Oct, 2021 **24 Oct, 2021**	Maharishi Valmiki Jayanti Sunday
May, 2021 4th Week **25 Oct-30 Oct**	Conjunction,disjunction,logical equivalence,laws of logic,conditional statements,quantifiers with examples and exercises.
31 Oct, 2021	Sunday
November, 2021 1st Week **1 Nov-7 Nov**	(Haryana Day) Diwali Holidays
2nd Week **8 Nov-13 Nov**	Linear and quadratic equations :degree of an equation ,roots of an equation.
14 Nov, 2021	Sunday
3rdWeek **15 Nov-20 Nov**	Simultaneous linear equations ,linear laws of demand and supply equations.
21 Nov, 2021	Sunday

4thWeek **22 Nov-27**	Market equiblirium,methods of solving a quadratic equation.permutations and combinations:factorial,permutations with repetitions.
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Circular permutations ,circular combinations,practical problems on permutations and combinations.
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Binomial theorems:binomial theorems for a positive integral index,determination of a particular term from end.
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Middle term in a binomial expansion,application of binomial theorem.
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Limits and continuity :functions ,limit of a function ,infinite limits,evaluation of limits.
25 Dec,2021 **26 Dec,2021**	Christmas Sunday
5th Week **27 Dec -01 Jan**	Continuity of a function,algebra of continuous functions,differential calculus:derivative of a function,first principle.
2 Jan ,2022	Sunday
Jan ,2022 1st week **3 Jan – 8 Jan**	Product rule,quotient rule,chain rule,differentiation of a logarithmic and exponential function,derivatives of higher order,maxima and minima of a function.
9 Jan ,2022	Sunday(Sh. Guru Gobind Singh's Birthday)
2nd Week **10 Jan – 15 Jan**	Matrices :meaning and elementary operations on matrices,inverse of a matrix.
16 Jan ,2022	**Sunday**

3rd week **17 Jan – 22 Jan**	Solution to linear equations (based on payroll ,wages and commission)using crammer's rule,solutions to linear equations using matrix inversion method.
23 Jan ,2022	Sunday
4th Week **24 Jan – 29 Jan**	Problem discussion.
26 Jan, 2022 **30 Jan ,2022**	Republic Day Sunday
Feb, 2021 1st week **31 Feb-4 Feb**	Revision and tests.
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Revision and tests.
13 Feb ,2022	Sunday
3rd week **14 Feb- 19 Feb**	Sessional

Name of the Teacher – Ms. SILKY PURI
Subject- MATHS
Paper- MATHEMATICAL FOUNDATIONS-I
Class- BCA-I

October, 2021 2rd Week **11 Oct-16 Oct**	Sets,subsetsand operations on sets.,venn diagram of sets.
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Permutation and combinations.partially ordered sets.lattices.boolean algebra.
20 Oct, 2021	Maharishi Valmiki Jayanti

24 Oct, 2021	Sunday
May, 2021 4th Week **25 Oct-30 Oct**	Epsilon and delta function of the continuity of a function of a single variable.basic properties of limits ,continuous functions and classification of discontinuities.
31 Oct, 2021	**Sunday**
November, 2021 1st Week **1 Nov-7 Nov**	(Haryana Day) Diwali Holidays
2nd Week **8 Nov-13 Nov**	Derivative of a function .derivative of logarithmic,exponential,trignometrical functions.derivative of inverse trignometrical functions.derivatives of hyperbolic functions
14 Nov, 2021	Sunday
3rdWeek **15 Nov-20 Nov**	Higher order derivatives.formation of differential equations.discuss about examples and exercises.
21 Nov, 2021	Sunday
4thWeek **22 Nov-27**	Order and degree of differential equation.geometrical approach to the existence of the solution of the differential equation dy/dx=f(x,y) Problem discussion and revision.

28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Ordinary differential equations.differential equation of first order and first degree.exact differential equations.
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Linear differential equations of higher order with constant coefficients.homogeneous linear differential equations with examples
12 Dec,2021	**Sunday**

3rd week **13 Dec -18 Dec**	Linear differential equations reducible to homogeneous differential equations with examples and exercises.
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Application of differential equations to geometry.
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Revision and class tests.
2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Revision and class tests.
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd Week **10 Jan – 15 Jan**	Problem discussion:differential equations
16 Jan ,2022	**Sunday**

3rd week **17 Jan – 22 Jan**	Revision and tests.
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Revision and tests.
26 Jan, 2022 **30 Jan ,2022**	Republic Day Sunday
Feb, 2021 1st week **31 Feb-4 Feb**	Revision and tests.

5 Feb, 2022 **6 Feb ,2022**	Vasant Panchmi Sunday
2nd week **7 Feb- 12 Feb**	Revision and tests.
13 Feb ,2022	Sunday
3rd week **14 Feb- 19 Feb**	Sessional

Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms. MEENU KALRA
Subject- MATHEMATICS
Paper- COMPUTER ORIENTED NUMERICAL METHODS
Class- B.C.A. SEM 3

October, 2021 1st Week **06Oct-09Oct**	Iterative Method, Bisection Method False Position Questions Newton-Raphson Method Questions
	Sunday
October, 2021 2rd Week **11 Oct-16 Oct**	Iteration Method Discussion of convergence Questions Questions Students problems
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**

3th Week **18 Oct-23 Oct**	Bairstow's method Continued Computer arithmetic:Floating point representation of numbers Arithmetic operations with normalized floating point numbers Continued
20 Oct, 2021 **24 Oct, 2021**	**Maharishi Valmiki Jayanti** **Sunday**
4th Week **25 Oct-30 Oct**	Consequences of floating point numbers Significant figures Error in number representation inherent error,truncation error Absolute error Relative error Students Problems
31 Oct, 2021	Sunday
November, 2021 1st Week **1 Nov-7 Nov**	 (Haryana Day) Diwali Holidays
2nd Week **8 Nov-13 Nov**	Percentage error Roundoff error Questions Questions Continued
14 Nov, 2021	Sunday
3rdWeek **15 Nov-20 Nov**	Gauss Elimination Method Questions Continued Pivoting Students Problems

21 Nov, 2021	**Sunday**
4thWeek **22 Nov-27**	Ill conditioned equations Refinement of solutions,Gauss seidal iterative method Questions Continued
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Gauss elimination methods Pivoting Ill-conditioned equations Questions
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Euler's Method Euler modified method Taylor-series method Questions Runga- Kutta Methods Questions
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Predictor Corrector Methods Questions Interpolation and Approximations Polynomial interpolation Newton Lagranges Methods Difference tables Questions
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Approximation of functions by Taylor Series Questions Chebyshev polynomial:First kind,Second kind and their relations

	Orthogonal Properties Questions
25 Dec,2021 **26 Dec,2021**	Christmas Sunday
5th Week **27 Dec -01 Jan**	Numerical Differentiation and integration Questions Differential equations Questions Based on polynomials fit,pitfalls in differentiation Questions
2 Jan ,2022	Sunday
Jan ,2022 1st week **3 Jan – 8 Jan**	Student Problems Class test Trapezoidal Rule Questions Questions Continued..
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	**Questions** **Questions**
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Simpsons Rules Questions
23 Jan ,2022	Sunday
4th Week **24 Jan – 29 Jan**	Gaussian Quardature Questions Questions

26 Jan, 2022 **30 Jan ,2022**	Republic Day Sunday
Feb, 2021 1st week **1 Feb-4 Feb**	Class Test Student Problem
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Topic wise Problems for students Class test Revision
13 Feb ,2022	Sunday
3rd week **14 Feb- 19 Feb**	REVISION

KVA DAV College for Women, Karnal

Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms. Sakshi
Subject- Mathematics
Paper-Algebra(MM-401)
Class- M.Sc. Mathematics(Sem I)

November, 2021 3rdWeek **15 Nov-20 Nov**	Automorphisms Of A Group G And Its Theorems.,Inner Automorphisms Of A Group G And Its Theorems,The Groups Aut (G) And Inn (G)Automorphisms Group Of A Cyclic Group And Its TheoremsTheorems Based On Normalizer And Centralizer Of A Non-Empty Subset Of A Group G.
19 Nov,2021 **21 Nov, 2021**	**Guru Nanak Jayanti** **Sunday**
4thWeek **22 Nov-27 Nov**	Conjugate Elements And Conjugate Classes,Class Equation Of A Finite Group And Its Application.,Derived Group Of A Group G.,Perfect Group And Its Theorems
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Zessenhau's Lemma.Definition Of Normal And Composition Series Of A Group G .Scheier's Refinement Theorem.Jordan Holder TheoremComposition Series Of Groups Of Order $\mathbf{p^n}$ Of Abelian GroupsCaunchy Theorem For Finite Group$\boldsymbol{\pi}$ Groups And P-Groups.Sylow$\boldsymbol{\pi}$ Subgroups And Its Theorems
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Sylow'sIst $_{AND,}$IInd Theorems,Sylow's Third Theorem Application Of Sylow Theory To Groups Of Smaller Orders. Characteristic Of A Ring With Unity, Prime Fields Z/pZ And Q. Fields Extensions And Its Theorems Test Of Zessenhau's Lemma, Scheier's Refinement Theorem And Jordan Holder Theorem.
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Degree Of An ExtensionAlgebraic And Transcendental Elements .Theorems Based On Algebraic Elements,Simple Field Extensions And Its Theorems,Minimal Polynomial Of An Algebraic Element And Its Theorems,Theorems Continued And Examples Based On It.
19 Dec,2021	**Sunday**

4th Week **20 Dec-24 Dec**	Theorems Based On Conjugate Elements,Algebraic Extensions And Its Theorems,Finitely Generated Algebraic Extensions,lgebraic Closure And Algebraically Closed Fields. Theorems Based On It.
25 Dec,2021 **26 Dec,2021**	**Merry Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Splitting Fields And its Theorems,Finite Fields,Normal Extensions And Its Theorems,Group Discussion On Algebraic Elements And Algebraic Extensions,Separable Elements, Separable Polynomials And Separable Extensions. Theorems Based On It.
2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Theorem Of Primitive Element,Perfect Field And Its Theorems. Theorems Continued Galois extensions, Galois group of an extension and its theorems Theorems Continued. Theorems Continued.
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Dedekind Lemma, Fundamental Theorem Of Galois Theory Fundamental Theorem Of Galois Theory Continued Test On Topic Minimal Polynomial, Conjugate Elements And Splitting Fields FrobeniusAutomorphisms Of A Finite Field Klein's 4-Group And Diheadral Group. Theorems Based On It. Theorems Continued.
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Galois Groups Of Polynomials And Its Theorems Fundamental Theorem Of Algebra Test Of Galois Extensions, Galois Group And Fundamental Theorem Of Galois 'S Theory. Solvable Groups And Its Theorems. Theorems Continued Theorems Continued
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Derived Series Of A Group G,Simplicity Of The Alternating Group A_n.

	Nonsolvability Of The Symmetric Group S_nAnd The Alternating Group A_n.Theorems Based On It. Theorems Continued. Roots Of Unity And Its Theorems
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1st week **1 Feb-4 Feb**	Cyclotomic Polynomials And Their Irreducibility Over Q .Theorems Based On It,Radicals Extensions And Its Theorems Theorems Continued Galois Radical Extensions And Its Theorems. Theorems Continued.
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Test On Solvable Group, Roots Of Unity And Cyclotomic Polynomials Cyclic Extensions And Its Theorems. Theorems Continued... . Theorems Based On It
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	Solvability Of Polynomials By Radicals Over Q. Theorems Based On It. Theorems Continued Symmetric Function And Elementary Symmetric Functions
16 Feb,2022 **20 Feb ,2022**	Ravidass Jayanti **Sunday**
4th week **21 Feb- 26 Feb**	Theorems Continued Construction With Ruler And Compass Only. Theorems And Examples Based On Construction With Ruler And Compass
27 Feb ,2022	**Sunday**
1st week **28 Feb-4 Mar**	Sessional test

KVA DAV College for Women, Karnal

Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms. Rakhi
Subject- Mathematics
Paper- Real Analysis-i(MM-402)
Class- M.Sc(Sem-I)

4thWeek **22 Nov-27**	**Section-I,** An Introduction to Riemann Stieltjes Integral. Definition of Riemann Stieltjes Integral. Existence of Riemann Stieltjes Integral. Properties of the Riemann Stieltjes Integral. Integration and Differentiation under integral.
28 Nov, 2021	**Sunday**
Dec, 2021 1stWeek **29 Nov-04 Dec**	Integration and Differentiation under integral continued. The Fundamental Theorem of Integral Calculus. Introduction to Integration by Parts. Integration of Vector Valued Functions.
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Integration of Vector Valued Functions continued. Introduction to Rectifiable curves. Discuss student problems related to section 1st. Test
12 Dec,2021	**Sunday**
3rdweek **13 Dec -18 Dec**	**Section-II** ,Introduction to pointwise and uniform convergence. Difference between pointwise and uniform convergence. Cauchy criterion for uniform convergence. Introduction to Weirstrass M-test Abel's test and Dirichlet's test for uniform convergence.
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Discuss student problems on above topics. Introduction to uniform convergence and continuity.

	Uniform convergence and Riemann Stieltjes integration. Uniform convergence and differentiation.
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Existence of a real continuous nowhere differentiable function. Introduction to Eqvicontinuous families of functions. Difference between continuous, uniform continuous and eqvicontinuous functions. Revision. Class Test.
2 Jan ,2022	**Sunday**
Jan ,2022 1stweek **3 Jan – 8 Jan**	Weierstrass Approximation Theorem. Discuss student problems related to section-2nd. Section-III,An Introduction to Functions of Several variables. Linear Transformations and derivative in an open subset of Rn.
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Introduction to chain rule, partial derivatives, directional derivatives and the Contraction Principle. Inverse Function Theorem. Implicit Function Theorem.
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Above Continued… Introduction to Jacobians, extremum problems with constraints and Lagrange's Multiplier method. Derivative of higher order, Mean value theorem for real functions of two variables. Interchange of order of differentiation and differentiation of integrals.

23 Jan ,2022	**Sunday**
4thWeek **24 Jan – 29 Jan**	Topic continued… Discuss student problems on section-3rd. **Section-IV,**Introduction to Power Series. Uniqueness theorem for power series. Abel's lemma and Abel's theorem. Tauber's theorem.
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1stweek **1 Feb-4 Feb**	Taylor's theorem. Exponential and Logarithmic functions. Discuss student problems. Test
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2ndweek **7 Feb- 12 Feb**	Properties of Exponential and Logarithmic functions. Trigonometric functions and their properties. Fourier series and Gamma Function.
13 Feb ,2022 **16 Feb,2022**	**Sunday** **Ravidas Jayanti**
3rdweek **14 Feb- 19 Feb**	Topic continued… An Introduction to Integration of differential forms. Partitions of Unity and differential forms. Topic continued… Test
20 Feb ,2022	**Sunday**
4th week **21Feb- 26 Feb**	Stokes Theorem. Discuss student problems. Discuss student problems. Test
27 Feb ,2022	**Sunday**
1st week **28 Feb- 04Mar**	Revision of Syllabus Revision of Syllabus

	Sessional test

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Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms. Rakhi
Subject- Mathematics
Paper- Topology(MM-403)
Class- M.Sc(Previous)

4thWeek **22 Nov-27**	Definition and examples of a topological spaces,neighbourhoods,neighbourhood system of a point and its properties. Interior point and interior of a set,interior as an operator and its properties. Definition of closed set as complement of open set. Limit point of a set,derived set of a set,definition of closure of a set as union of the set and its derived set. Adherent point of a set,closure of a set as set of adherent point, properties of closure, closure as an operator and its properties. Boundary of a set, dense sets, a characterization of dense sets. Base for a topology and its characterization. Base for neighbourhood system subbase for a topology.relative topology and subspace of a T.S.
28 Nov, 2021	**Sunday**
Dec, 2021 1stWeek **29 Nov-04 Dec**	Alternate examples of defining a topology using properties of 'Nbd system' , 'interior operator' , 'closed sets', kuratowski closure operator and base. First countable, second countable and seperable spaces, their relationships and hereditary property. About countability of a collection of disjoint open setsin a seperable and a second countable space. Lindelof theorem. Comparison of topologies on a set. Test and revision.
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	About intersection and union of topologies. Infimum and supremum of a collection of topologies on a set. Test and revision The collection of all topologies on a set as a complete lattice.

	Questions for problems. Definition , examples and characterizations of continuous functios. Composion of cts functions, open and closed functions, homeomorphism .
12 Dec,2021	**Sunday**
3rdweek **13 Dec -18 Dec**	Test and revision Embedding, tychonoff product topology in terms of standard subbase. Related examples Projection maps, their continuity and openness.characterization of product topology as the smallest topology with projection continous. Continuity of a function from a space into a product of spaces. T0 ,T1 space.
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	T2 , Regular and T3 seperation axioms, their characterization . Examples on these spaces. Basic properties i.e. hereditary property of T0, T1, regular and T3 spaces. Test and revision.
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Do some practice sum. About housdorffness of quotient space. Test and revision. Productive property of T1 and T2 spaces. Quotient topology w.r.t. a map. Related examples. Continuity of a function with domain a space having quotient space. Completely regular and tychonoff spaces, their hereditary and productive properties
2 Jan ,2022	**Sunday**
Jan ,2022 1stweek	Embedding lemma and embedding theorem. Normal and T4 spaces: definions and examples.

3 Jan – 8 Jan	Solve Practice sum and discuss them. Urysohn''s lemma, complete regularity of a regular normal space. T4 implies tychonoff, tietze'sextentiontheorem (statement only).
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Definition and examples of filters on a set. Collection of all filters on a set as a p.o. set, finer filters. Methods of generating filters/finer filters, ultra filter (u.f.) and its characterizations. Ultra filter principle. Test and revision. Discuss related problems.
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Image of filter under a function. Convergence of filters : limit point and limit of a filter and relationship between them. Continuity in terms of convergence of filters, housdorffness and filter convergence. Test and revision Continuity and compact set, compactness and separation properties. COMPACTNESS: definitions and examples of compact spaces. Definition of a compact subset as a compact subspace. Related examples
23 Jan ,2022	**Sunday**
4thWeek **24 Jan – 29 Jan**	Relation of open cover of a subset of a T.S. in the subspace with that in the main space. Compactness in terms of finite intersection property (f.i.p.). Regularity and normality of a compact hausdroff space. Compactness and filter convergence.
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1stweek	Convergence of filter in a product space. Tychonoff product theorem using filters.

1 Feb-4 Feb	Practice questions. Related examples. Test and revision. Questions related to above topic.
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Tychonoff space as a subspace of a compact hausdroff space and its converse. related examples related examples Compactness and hausdroff compactification. Test and revision Stone- Cech compactification.
13 Feb ,2022 **16 Feb,2022**	**Sunday** **Ravidas Jayanti**
3rd week **14 Feb- 19 Feb**	related examples Closedness of compact subset, closedness of continuous map from a compact space into a hausdroff space and its convergence. Group discussion on different topologies. Test and revision
20 Feb ,2022	**Sunday**
4th week **21Feb- 26 Feb**	Examples for revision., Assignment on compactness. related examples
27 Feb ,2022	**Sunday**
1st week **28 Feb- 04Mar**	

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Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms. Monila Bansal
Subject- Mathematics
Paper- Complex Analysis-I(MM-404)
Class- M.Sc. Mathematics(Sem I)

November, 2021 3rdWeek **15 Nov-20 Nov**	An introduction to Complex analysis Introduction to power series and its convergence Theorems based on sum, product of power series and its radius of convergence Examples based on radius of convergence Differentiability of sum function of power series
19 Nov,2021 **21 Nov, 2021**	**Guru Nanak Jayanti** **Sunday**
4thWeek **22 Nov-27**	Exp(z) and its properties Theorem based on branch of logarithm Power of a complex number, their branches and analyticity Definition :path in a region, smooth path, contour,simple connected region and multiple connected region Theorem based on bounded variation and total variation
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Complex integration and related examples Cauchy goursat theorem Cauchy theorem for simply and multiple connected domain
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Cauchy integral formula Extension of Cauchy integral formula for multiple connected domain Higher order derivative of Cauchy integral formula Examples related to Cauchy integral formula Gauss mean value theorem
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Morera's theorem Fundamental theorem of algebra

	Entire functions and radius of convergence Cauchy inequality and liouville's theorem Theorem and examples based on liouville's theorem
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Winding number of a closed curve with some properties Zero of an analytic function Entire function and its radius of convergence Taylor's theorem Theorem based examples
25 Dec,2021 **26 Dec,2021**	**Merry Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Laurent's series example related to laurent's series Maximum modulus principle Minimum modulus principle Schwarz lemma Theorem based on Schwarz lemma
2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Singularity and their classification Pole of a function and its order Examples based on singularities Riemann theorem
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Cassorati-weierstrass theorem Meromorphic function ,poles and zeros of meromorphic function Argument principle Rouche's theorem Example based on rouche's theorem
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Inverse function theorem Related examples Def: residue Example based on residue of a pole

	Residue at infinity
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Cauchy residue theorem Theorem based on residue Liouville theorem based on residue theorem Example on Cauchy residue theorem
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1st week **1 Feb-4 Feb**	Integral type I Integral type II
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Integral type III Integral type IV
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	Bilinear transformation ,their properties Inverse ,magnification,rotation,inversion transformation Critical points Cross ratio and its example
16 Feb,2022 **20 Feb ,2022**	Ravidass Jayanti **Sunday**
4th week **21 Feb- 26 Feb**	Preservance of cross ratio under bilinear transformation Preservance of circle and straight line under bilinear transformation Fixed point bilinear transformation Normal form of bilinear transformation Definition: conformal mapping Theorem based on conformal mapping
27 Feb ,2022	**Sunday**
1st week **28 Feb-4 Mar**	Sessional test

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Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms.Rakhi
Subject- Mathematics
Paper- Differential Equations-I(MM-405)
Class- M.Sc(Previous)

4th Week **22 Nov-27**	Definition of initial value problem and equivalent integral equation Definition of E-approximate solution and examples Equicontinuous set of functions Ascoli -Arzela theorem Cauchy-Peano existence theorem and it's corollary
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Definition of Lipschitz condition and examples Differential inequalities and uniqueness Gronwall 's inequality Successive approximation with examples Group discussion Picard-Lindelof theorem
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Continuation of solution Maximal interval of existence Extension theorem Kneser'stheorem (statement only) Revision Definition and notations of linear differential system
12 Dec,2021	**Sunday**
3rdweek **13 Dec -18 Dec**	Linear homogenous system Definition of fundamental matrix and Adjoint system Reduction to smaller homogenous system Non-homogeneous linear system Test Variation of constants
19 Dec,2021	**Sunday**

4th Week **20 Dec-24 Dec**	Linear system with constant coefficients Linear system with periodic coefficients Floquet theory Group discussion Test
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Linear differential equation of order n Linear combinations and examples Linear dependence and linear independence solutions Definition, necessary and sufficient condition for linear dependence and linear independent solutions of homogeneous linear differential equation Revision Abel's Identity
2 Jan ,2022	**Sunday**
Jan ,2022 1stweek **3 Jan – 8 Jan**	Fundamental set Wronskian theory and examples Test Reduction of order Non-homogenous linear differential equation Group discussion
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Variation of parameters Adjoint equations Lagrange's Identity Green's formula Linear equation of order n with constant coefficients Numericals
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Revision Test Group discussion

	System of differential equations The n-th order equation Revision
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Test Dependence of solutions on initial conditions and parameters Examples Group discussion Test Preliminiaries
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1st week **1 Feb-4 Feb**	Definition of Continuity Definition of differentiability Definition of maximal and minimal solutions Group discission Differential inequalities Numericals
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Theorem of wintner Uniqueness theorems Kamke's theorem
13 Feb ,2022 **16 Feb,2022**	**Sunday** **Ravidas Jayanti**
3rd week **14 Feb- 19 Feb**	Osgood theorem,group discussion Numerical of Lipschitz condition
20 Feb ,2022	**Sunday**

4th week **21Feb- 26 Feb**	Numerical of picard- lindelof theoremNumerical of fundamental matrix Numerical of variation of parameters Numerical of Wronskian theory Numerical of linear combinations,linear dependent and independent solutions
27 Feb ,2022	**Sunday**
1st week **28 Feb- 04Mar**	Sessional test

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Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms. SAKSHI
Subject- Mathematics
Paper- Functional Analysis (MM-501)
Class- M.Sc.(III semester)

October, 2021 2rd Week **11 Oct-16 Oct**	Normed Linear Space. Banach Space And Examples.
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Theorems Based On Subspace Of A Banach Space. Completion Of Normed Space And its theorems. Quotient Space Of Normed Linear Space, And Its Completeness. Product Of Normed Space.
20 Oct, 2021 **24 Oct, 2021**	**Maharishi Valmiki Jayanti** **Sunday**
4th Week **25 Oct-30 Oct**	Finite Dimensional Normed Space And Subspaces. Equivalent Norms And Its Theorems. Compactness And Finite Dimension .Theorems Based On It.
31 Oct, 2021	**Sunday**
November, 2021 1st Week **1 Nov-7 Nov**	**(Haryana Day)** **Diwali Holidays**
2nd Week **8 Nov-13 Nov**	F.Riesz 'S Lemma. Test Of Normed Linear And Banach Space. Bounded And Continuous Linear Space. Theorems Based On Bounded And Continuous Linear Operator. Differentiation Operator And Its Examples. Integral Operator And Examples.

14 Nov, 2021	**Sunday**
3rdWeek **15 Nov-20 Nov**	Bounded Linear Extension And Theorems Based On It. Linear Functional. Group Discussion On Completion Of A Normed Space. Continuity And Boundedness. Definite Integral. Theorems Based On Canonical Mapping.
19 Nov,2021 **21 Nov, 2021**	Guru Nanak jayanti **Sunday**
4thWeek **22 Nov-27**	Linear Operator And Functional On Finite Dimensional Spaces. Normed Spaces Of Operators. Dual spaces With Examples. Examples Continued. Hahn-Banach Theorem For Real Linear Spaces.
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Hahn-Banach Theorem For Complex Linear Spaces. Hahn-Banach Theorem For Normed Linear Spaces. Application To Bounded Linear Functional On C [A,B] Riesz-Representation Theorem For Bounded Linear Functional On C [A,B] Adjoint Operator ,Norm Of The Adjoint Operator .Examples Based On It. Reflexive Spaces And Its Theorems.
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Theorems Continued. Uniform Boundedness Theorems And Its Applications To The Space Of Polynomials And Fourier Series. Test Of Hahn-Banach Theorems. Strong And Weak Convergence .Theorems On Strong And Weak Convergence. Weak Convergence In Lp. Convergence Of Sequences Of Operators.
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Uniform Operator Convergence. Strong Operator Convergence And its theorems.

	Weak Operator Convergence And Its Theorems. Strong And Weak Convergence Of A Sequence Of Functional. Open Mapping Theorem. Bounded Inverse Theorem.
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Closed Linear Operators. Closed Graph Theorem. Differential Operator And Examples Based On It. Relation Between Closedness And Boundedness Of A Linear Operator. Inner Product Space And Its Examples. Hilbert Space And Their Examples.
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Examples Continued. Pythagorean Theorem. Apolloniu's Identity Schwarz Inequality. Continuity Of Inner Product .Examples Based On It.
2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Completion Of An Inner Product Space. Subspace Of A Hilbert Space. Orthogonal Complements And Direct Sum .Theorems Based On It. Projection Theorem
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Orthonormal Set And Sequences. Bessel's Inequality, Series Related To Sequences And Sets. Total Orthonormal Sequences And Sets. Parseval's Identity. Separable Hilbert Space Representation Of Functionals On Hilbert Spaces.
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Riesz Representation Theorem For Bounded Linear Functionals On A Hilbert Space.

	Sesquilinear Form. Riesz Representation Theorem For Bounded Sesquilinear Forms On A Hilbert Space. Hilbert Adjoint Operator And Its Theorems. Existence And Uniqueness Of Hilbert Adjoint Operator. Properties Of Hilbert Adjoint Operators.
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Self Adjoint Operator And Its Theorems. Unitary Operator, Normal Operator And Theorems. Positive And Projection Operator.
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1st week **1 Feb-4 Feb**	Sessional Test
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Sessional Test
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	Revision of Syllabus

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Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms. Monila Bansal
Subject- Mathematics
Paper- Analytic Mechanics and Calculus of Variation(MM-502)
Class- M.sc.(Mathematics) Sem III

October, 2021 2rd Week **11 Oct-16 Oct**	**An introduction** to functional Some basic theorem of calculus of variation Fundamental lemma of calculus of variation Euler,s theorem,Examples related to euler's theorem Shortest distance, minimum surface of revolution
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Brachristochrone problem, Euler's equation for one dependent function of one and several independent theorem Functional depending on'n' dependent functions, Example based on functional depending on 'n' dependent functions
20 Oct, 2021 **24 Oct, 2021**	**Maharishi Valmiki Jayanti** **Sunday**
4th Week **25 Oct-30 Oct**	Functional depending on higher order derivative Examples related to higher order derivative variational derivative Invariance of euler's equation and related examples
31 Oct, 2021	**Sunday**
November, 2021 1st Week **1 Nov-7 Nov**	 **(Haryana Day)** **Diwali Holidays**
2nd Week **8 Nov-13 Nov**	Natural boundary conditions isoperimetric problem geodesic
14 Nov, 2021	**Sunday**

3rdWeek **15 Nov-20 Nov**	Transversality condition Conditional extremum under geometric constraints and under integral constraints Variable end points
21 Nov, 2021	**Sunday**
4thWeek **22 Nov-27**	Test Free and constrained systems Constraints and their classification
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Holonomic and non holonomic systems Scleronomic and rheonomic systems Generalized coordinates Generalized potential Possible and virtual displacement Ideal constraints
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	General equation of dynamics Reaction Forces Lagrange's equation of first kind Principle of virtual displacements, D'Alembert principle Holonomic system independent coordinate
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Generalized forces Lagrange's equations of second kind Uniqueness of solution Theorem on variation of total energy Gyroscopic and dissipative forces
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Lagrange's equation for potential forces equation for conservative fields Hamilton's variables Don kin's theorem,

	Hamilton canonical equation
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Routh's equation Cyclic coordinates Poisson's bracket ,poisson's identity
2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Jacobi poisson theorem Hamilton's principle Second form of hamilton's principle Poin care carton integral invariant
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Whittaker's equation Jacobi equation Principle of least action Canonical transformation Free canonical transformation Hamilton Jacobi equation
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Jacobi theorem Method of separation of variables for solving Hamilton –jacobi equation Testing the canonical character of a transformation
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Lagrange's bracket Condition of canonical character of a transformation Simplicial nature of a Jacobi matrix of a canonoical transformation Invariance of lagrange's brackets and Poisson brackets under canonical transformation Revision of syllabus
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**

Feb, 2021 1st week **1 Feb-4 Feb**	Sessional test
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Sessional test
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	Revision of the syllabus

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Lesson plan for the odd semester
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Name of the Teacher – Ms. SAKSHI
Subject- Mathematics
Paper- Elasticity(MM-503)
Class- M.Sc.(III semester)

October, 2021 2rd Week **11 Oct-16 Oct**	Introduction of Tensor Algebra Tensor Algebra: Coordinate transformation.
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Tensor of different orders.
20 Oct, 2021 **24 Oct, 2021**	**Maharishi Valmiki Jayanti** **Sunday**
4th Week **25 Oct-30 Oct**	Relation between tensors of different orders. Symmetric and skew symmetric tensor.
31 Oct, 2021	**Sunday**
November, 2021 1st Week **1 Nov-7 Nov**	 **(Haryana Day)** **Diwali Holidays**
2nd Week **8 Nov-13 Nov**	Problem discussion Tensor Invariants. Deviatoric tensors, Eigen values of a tensor.
14 Nov, 2021	**Sunday**

3rdWeek **15 Nov-20 Nov**	Eigen vectors of a tensor. Numericals related to the Eigen values and Eigen functions of a tensor. Tensor Analysis: Scaler, Vector,Tensor functions.
19 Nov,2021 **21 Nov, 2021**	Guru Nanak jayanti **Sunday**
4thWeek **22 Nov-27**	Comma notation, Gradient. Divergence and curl of a Vector/tensor field. Problem discussion.
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Analysis of Strain: Affine transformation. Infinitesimal affine transformation. Geometrical interpretation of the components of strain.
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Strain quadric of Cauchy. Principal strain and invariance. General infinitesimal deformation.
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Saint-Venant's equations of compatibility. Finite deformations.
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Analysis of Stress: Stress Vector, stress tensor. Equations of Equilibrium. Transformation of coordinates.

	stress quadric of Cauchy.
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Principal stress and invariants. Maximal normal and shear stresses.
2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Mohr's Circles. Examples of stresses.
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Equations of Elasticity: Generalised Hooke's law. Anisotopic Symmetries. Homogeneous isotropic medium.
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Problem discussion Elasticity moduli for isotropic media. Equilibrium and dynamic equations for an isotropic elastic solid.
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Strain energy functions and its connection with Hooke's law. Uniqueness of solutions. Beltrami-Michell compatability equations. Clapeyron's theorem. Saint-Venant's principal
26 Jan, 2022	**Republic Day**

30 Jan ,2022	**Sunday**
Feb, 2021 1st week **1 Feb-4 Feb**	Sessional Test
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Sessional Test
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	Revision of Syllabus

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Lesson plan for the odd semester
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Name of the Teacher – Ms. Monila Bansal
Subject- Mathematics
Paper- Fluid Mechanics-I(MM-504)
Class- M.sc.(Mathematics) Sem III

October, 2021 2rd Week **11 Oct-16 Oct**	**An introduction** to fluid dynamics Some basic definition of fluid mechanics Velocity at a point of a fluid Lagrangian and Eulerian methods Relationship between lagrangian and eulerian methods
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Stream lines,path lines and streak lines Vorticity and circulation Vortex lines Material derivative of fluid
20 Oct, 2021 **24 Oct, 2021**	**Maharishi Valmiki Jayanti** **Sunday**
4th Week **25 Oct-30 Oct**	Acceleration of a fluid Significance of equation of continuity, Equation of continuity in vector form Equation of continuity in Cartesian form Equation of continuity by lagrangian method Equivalence relation between lagrangian and eulerian equation of continuity
31 Oct, 2021	**Sunday**
November, 2021 1st Week **1 Nov-7 Nov**	 **(Haryana Day)** **Diwali Holidays**
2nd Week **8 Nov-13 Nov**	General analysis of fluid motion Boundary surfaces and boundary surface conditions Properties of fluids-static and dynamic pressure

	Irrotational and rotational motion, velocity potential
14 Nov, 2021	**Sunday**
3rdWeek **15 Nov-20 Nov**	Reynolds transport theorem Euler's equation of motion Conservative forces Lagrange's equation of motion Bernouilli's theorem
19 Nov,2021 **21 Nov, 2021**	**Guru Nanak Jayanti** **Sunday**
4thWeek **22 Nov-27**	Application of Bernouilli's equation in one dimensional flow problems Kelvin circulation theorem Kelvin minimum energy theorem Vorticity equation
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Energy equation for incompressible flow Kinetic energy of irrotational flow Mean potential over spherical surface Kinetic energy of infinite liquid Uniqueness theorem
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Definition of real fluid and ideal fluid Stress component in a real fluid Relation between rectangular component of stress
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	Connection between stresses and gradients of velocity Navier stoke's equation of motion Steady flow between two parallel plates Plane poiseuille flow Couette flow
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	Reduction of navier stoke equation in flows having axis of symmetry Steady flow in circular pipe Hagen poiseuille flow

25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Steady flow between two coaxial cylinders Flow between two concentric rotating cylinders
2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Related examples Corollary of rotating cylinde Steady flow through tubes of uniform cross section Uniqueness theorem
9 Jan ,2022	**Sunday(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Ellipse cross section Equilateral triangle cross section
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Rectangular cross section under constant pressure Example based on coaxial cylinders Example based on stress strain relation
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Some important examples Revision of syllabus
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1st week **1 Feb-4 Feb**	Sessional test
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Sessional test
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	Revision of the syllabus

KVA DAV College for Women, Karnal

Lesson plan for the odd semester
(October, 2021 to February, 2022)

Name of the Teacher – Ms. Monila Bansal
Subject- Mathematics
Paper- Integral Equation(MM-505)
Class- M.sc.(Mathematics) Sem III

October, 2021 2rd Week **11 Oct-16 Oct**	Definition of integral equation and their classifications Eigen values and eigen functions, Special kinds of kernel ,convolution integral The inner or scalar product of two functions
15 Oct, 2021 **17 Oct, 2021**	**(Dussehra)** **Sunday**
3th Week **18 Oct-23 Oct**	Reduction to a system of algebraic equations Examples related to algebraic equation
20 Oct, 2021 **24 Oct, 2021**	**Maharishi Valmiki Jayanti** **Sunday**
4th Week **25 Oct-30 Oct**	Fredholm alternative Fredholm theorem Fredholm alternative theorem
31 Oct, 2021	**Sunday**
November, 2021 1st Week **1 Nov-7 Nov**	 **(Haryana Day)** **Diwali Holidays**
2nd Week **8 Nov-13 Nov**	Approximate method Related examples Method of successive approximation
14 Nov, 2021	**Sunday**
3rdWeek **15 Nov-20 Nov**	Iterative scheme for fredholm and volterra integral equation Conditions of uniform convergence and uniqueness of series solution Resolvent kernel and related examples

	Theorem based on resolvent kernel
21 Nov, 2021	**Sunday**
4thWeek **22 Nov-27**	Classical fredholm's theory,the method of solution fredholm equation Fredholm's first theorem Examples of Fredholm's first theorem
28 Nov, 2021	**Sunday**
Dec, 2021 1st Week **29 Nov-04 Dec**	Fredholm's second theorem Fredholm's third theorem
05 Dec, 2021	**Sunday**
2nd Week **06 Dec -11 Dec**	Examples related to fredholm's theorem Symmetric kernels Complex Hilbert space Orthonormal system of functions Riesz –Fisher theorem
12 Dec,2021	**Sunday**
3rd week **13 Dec -18 Dec**	A complete two dimensional orthonormal set over rectangle Fundamental properties of eigenvalues and eigen functions for symmetric kernels
19 Dec,2021	**Sunday**
4th Week **20 Dec-24 Dec**	expansion in eigen functions and bilinear form Hilbert-schmidt theorem and some immediate consequences
25 Dec,2021 **26 Dec,2021**	**Christmas** **Sunday**
5th Week **27 Dec -01 Jan**	Definite kernels and Mercer's theorem Solution of a symmetric integral equation

2 Jan ,2022	**Sunday**
Jan ,2022 1st week **3 Jan – 8 Jan**	Approximation of a general l_2—kernel by a separable kernel The operator method in theory of integral equations Rayleigh-ritz method for finding the first eigen value Related examples
9 Jan ,2022	**Sunday** **(Sh. Guru Gobind Singh's Birthday)**
2nd week **10 Jan – 15 Jan**	Abel integral equation
16 Jan ,2022	**Sunday**
3rdweek **17 Jan – 22 Jan**	Inversion formula for singular integral equation Cauchy's principal value for integral solution
23 Jan ,2022	**Sunday**
4th Week **24 Jan – 29 Jan**	Cauchy type singular integral equation Closed and unclosed contours Riemann Hilbert problem The Hilbert –Kernel solution of the Hilbert type singular integral equation
26 Jan, 2022 **30 Jan ,2022**	**Republic Day** **Sunday**
Feb, 2021 1st week **1 Feb-4 Feb**	Sessional test
5 Feb, 2022 **6 Feb ,2022**	**Vasant Panchmi** **Sunday**
2nd week **7 Feb- 12 Feb**	Sessional test
13 Feb ,2022	**Sunday**
3rd week **14 Feb- 19 Feb**	Revision of the syllabus