I.B. (PG) COLLEGE, PANIPAT

LESSON PLAN

SESSION 2022-23 (01.02.2023 to 16.05.2023)

Weekly Lesson Plan Even Semester)

PG (IV - Semester)

Name of the Paper:-General Measure And Integration Theory Class: M.Sc.- Final

Name of the Teachers (Section Wise) : Prof. Deepali

WEEK	DATE	TOPICS
1	February (1-4)	Measures and its properties
		Outer measures
		Some results based on outer measures
		Extension of measures
SUNDAY - 05.02.2023 Holiday (Guru Ravidass Jayanti)		
2	February (6-11)	Uniqueness of extension
		Completion of a measure
		The LUB of an increasingly directed family of measures
		Some results based on the LUB of an increasingly directed family of measures
		Measurable functions
		Problem Discussion
SUNDAY - 12.02.2023		
3	February (13-17)	Combinations of measurable functions
		Limits of measurable functions
		Localization of measurability
		Simple function
		Some more results of simple functions
HOLIDAY - 18.02.2023 (Maha Shivratri)		
SUNDAY - 19.02.2023		
4	February (20-25)	Test
		Section-II Measure spaces
		Some more results of Measure spaces
		Almost everywhere convergence
		Some more results of Almost everywhere convergence
		Fundamental almost everywhere
SUNDAY - 26.02.2023		
5	February (27-28) March (1-4)	Some more results of fundamental almost everywhere
		Convergence in measure
		Fundamental in measure
		Some more results of fundamental in measure and convergence in measure
		Almost uniform convergence
		Egoroff's theorem
SUNDAY - 05.03.2023		
Holi Vacations - 05.03.2023 to 12.03.2023		
7	March (13-18)	Riesz-Weyl theorem
		Integration with respect to a measure:Integrable simple functions
		Some more results of integrable simple functions
		Problem Discussion
		Non-negative integrable functions
		Some more results of non-negative integrable functions
SUNDAY - 19.03.2023		

8	March (20-25)	Integrable functions
		Some more results of Integrable functions
		Indefinite integrals
		Some more results of Indefinite integrals
		The monotone convergence theorem
SUNDAY - 26.03.2023		
HOLIDAY 23.03.2023 Shaheedi Diwas		
9	March (27-31) April (1)	Mean convergence
		Some more results of Mean convergence
		Problem Discussion
		Test
		Section-III Product Measures:Rectangles
HOLIDAY - 30.03.2023 (Ram Navmi)		
SUNDAY - 02.04.2023		
9	April (3-8)	Some more results of Rectangles Cartesian product of two measurable spaces Some more results of Cartesian product of two measurable spaces Measurable rectangle
		Some more results of measurable rectangle
HOLIDAY - 04.04.2023 (Mahavir Jayanti)		
SUNDAY - 09.04.2023		
10	April (10-15)	The product of two finite measure spaces
		Some more results of the product of two finite measure spaces
		product of two s - finite measure spaces
		Iterated integrals
		Fubini's Theorem s
SUNDAY - 16.04.2023		
HOLIDAY - 14.04.2023 (DR.B.R.Ambedkar Jayanti)		
11	April (17-21)	A partial converse to the Fubini's theorem
		Signed Measure: Absolute continuity
		Finite singed measure
		Contractions of a finite signed measure
		Purely positive and purely negative sets
SUNDAY - 23.04.2023		
Holiday Id-Ul-Fitr/Parshuram Jayanti (Saturaday)		
12	April (24-29)	some results on Purely positive and purely negative sets
		Comparison of finite measures
		Some more results of Comparison of finite measures
		Lebesgue decomposition theorem,A preliminary Radon-Nikodym theorem,
		Hahn decomposition, Jordan decomposition
		upper variation,Lower variation, total variation, domination of finite signed
SUNDAY - 30.04.2023		
13	May (1-6)	The Radyon-Nikodym theorem for a finite measure space,
		Baire sets
		Baire function
		Baire-sandwich theorem
		Baire measure
		Borel set
SUNDAY - 07.05.2023		
14	May (8-13)	Some results of Borel sets
		Regularity of Baire measures
		Some results of Regularity of Baire measures
		Regular Borel measures
		Some results of Regular Borel measures
		Integration of continuous functions with compact support
SUNDAY - 14.05.2023		
14	May (15-16)	Riesz-Markoff's theorem
		Revision
Examination 17.05.2023 Onwards.		

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LESSON PLAN

SESSION 2022-23 (01.02.2023 to 16.05.2023)

Weekly Lesson Plan Even Semester)

PG (IV - Semester)

Name of the Paper:- PDE **Class: M.SC-F**

Name of the Teachers (Section Wise) : KOMAL

WEEK	DATE	TOPICS
1	February (1-4)	Definition,Examples and classification of PDE of kth order
		Definition,Examples and classification of PDE of kth order
		Initial Value Problems
		Homogeneous Transport Equation
SUNDAY - 05.02.2023 Holiday (Guru Ravidass Jayanti)		
2	February (6-11)	Non Homogeneous Transport Equation
		Radial Solution of Laplace Equation
		Radial Solution of Laplace Equation
		Fundamental Solutions
		Harmonic Functions
		Properties of Harmonic functions
SUNDAY - 12.02.2023		
3	February (13-17)	Mean Value Formulas
		Related theorems
		Poisson's equation and its Solution
		Poisson's equation and its Solution
		Problems Discussion
HOLIDAY - 18.02.2023 (Maha Shivratri)		
SUNDAY - 19.02.2023		
4	February (20-25)	Strong Maximum Principle
		Uniquess of Strong maximum principle
		Local Estimate for Harmonic functions
		Local Estimate for Harmonic functions
		Liouville's Theorem
		Harnack's Inequality
SUNDAY - 26.02.2023		
5	February (27-28) March (1-4)	Problems Discussion
		Test
		Green Function and its Derivation
		Representation Formula using Green function
		Representation Formula using Green function
		Symmetry of Green's function
SUNDAY - 05.03.2023		
Holi Vacations - 05.03.2023 to 12.03.2023		
7	March (13-18)	Green Function for a Half Space
		Green Function for a Ball
		Energy Methods
		Uniqueness of energy Methods
		Dirichlet Principle
		Heat Equations
SUNDAY - 19.03.2023		

8	March (20-25)	Physical interpretation of Heat Equations
		Fundamental solution of Heat Equation
		Fundamental solution of Heat Equation
		Integral of Fundamental Solution
		PROBLEM DISCUSSION
SUNDAY - 26.03.2023		
HOLIDAY 23.03.2023 Shaheedi Diwas		
9	March (27-31) April (1)	Solution of Initial value Problem
		Duhamel's Principle
		Non Homogeneous Heat Equation
		Mean Value Formula for Heat Equation
		Mean Value Formula for Heat Equation
HOLIDAY - 30.03.2023 (Ram Navmi)		
SUNDAY - 02.04.2023		
9	April (3-8)	Uniqueness of Strong Maximum Principle
		Uniqueness of Strong Maximum Principle
		Energy Methods
		Related theorems
		Problems Discussion
HOLIDAY - 04.04.2023 (Mahavir Jayanti)		
SUNDAY - 09.04.2023		
10	April (10-15)	Wave Equation
		Physical interpretation of Wave Equations
		Solution of one dimensional wave equation
		D'alembert formula
		Applications of D'alembert principle
SUNDAY - 16.04.2023		
HOLIDAY - 14.04.2023 (DR.B.R.Ambedkar Jayanti)		
11	April (17-21)	Reflection Method
		Reflection Method
		Solution by Spherical means
		Solution by Spherical means
		Euler Poission Darboux equation
SUNDAY - 23.04.2023		
Holiday Id-Ul-Fitr/Parshuram Jayanti (Saturaday)		
12	April (24-29)	Kirchhoff's Formula
		Poission's Formula
		Poission's Formula
		Solution of Non Homogeneous Wave Equation for n=1
		Solution of Non Homogeneous Wave Equation for n=3
		Energy Methods
SUNDAY - 30.04.2023		
13	May (1-6)	Uniqueness of Solution
		Finite Propagation speed of Wave equation
		Finite Propagation speed of Wave equation
		Non Linear first order Partial Differential Equations
		Complete Integrals
		Characteristics of Linear, quasilinear and fully non linear PDE
SUNDAY - 07.05.2023		
14	May (8-13)	Legendre Transform
		Plane and Travelling Waves
		Similarity under Scaling
		Fourier Transform
		Laplace Transform
		Conversion of Non Linear into linear PDE
SUNDAY - 14.05.2023		
14	May (15-16)	Hodograph and Legendre Transforms
		9
Examination 17.05.2023 Onwards.		

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LESSON PLAN

SESSION 2022-23 (01.02.2023 to 16.05.2023)

Weekly Lesson Plan Even Semester)

PG (IV - Semester)

Name of the Paper:- Algebraic Number Theory **Class: M.Sc. IV Sem**

Name of the Teachers (Section Wise) : Shivani Mittal

WEEK	DATE	TOPICS
1	February (1-4)	Introduction to Algebraic numbers and algebraic integers
		some results and theorem based upon algebraic number and algebraic integers
		Transcendental numbers
		theorem based on transcedental numbers
SUNDAY - 05.02.2023 Holiday (Guru Ravidass Jayanti)		
2	February (6-11)	Liouville's theorem for real algebraic numbers
		Doubt class
		Thue Theorem and Roth's Theorem
		Doubt class
		Algebraic number field K
		theorem based upon algebraic number field
SUNDAY - 12.02.2023		
3	February (13-17)	Theorem of primitive elements
		corollaries and some results related to primitive elements
		Primitive m-th roots of unity
		Theorem related to mth root of unity
		problem solving
HOLIDAY - 18.02.2023 (Maha Shivratri)		
SUNDAY - 19.02.2023		
4	February (20-25)	cyclotomic poynomials
		cyclotomic polynoimal is monic., irreducible
		Liouville's Theorem for complex algebraic numbers
		Doubt class
		Minimal polynomial of an algebraic integer
		some prepositions
SUNDAY - 26.02.2023		
5	February (27-28) March (1-4)	Test
		Norm and Trace of algebraic numbers and algebraic integers
		Bilinear form on algebraic number field K
		doubts class
		Integral basis and discriminant of algebraic number field
		Index of an element of K
SUNDAY - 05.03.2023		
Holi Vacations - 05.03.2023 to 12.03.2023		
7	March (13-18)	Ring OK of algebraic integers of an algebraic number field K
		Test
		Ideals in the ring of algebraic number field K
		Integrally closed domains
		Integral basis and discriminant of algebraic number field
		Index of an element of K
SUNDAY - 19.03.2023		

8	March (20-25)	Ring OK of algebraic integers of an algebraic number field K
		Test
		Ideals in the ring of algebraic number field K
		Integrally closed domains
		Fractional ideals of K
SUNDAY - 26.03.2023		
HOLIDAY 23.03.2023 Shaheedi Diwas		
9	March (27-31) April (1)	Factorization of ideals as a product of prime ideals in ring of
		doubt class
		algebraic integers of an algebraic number field K
		G. C. D and L. C. M of ideals in Ok
		Test
HOLIDAY - 30.03.2023 (Ram Navmi)		
SUNDAY - 02.04.2023		
9	April (3-8)	Chinese remainder theorem
		Doubt class
		Different of an algebraic number field K
		Dedekind Theoem
		doubt class
HOLIDAY - 04.04.2023 (Mahavir Jayanti)		
SUNDAY - 09.04.2023		
10	April (10-15)	Euclidean Rings
		theorem related to previous topic
		revision
		Hurwitz Lemma and Hurwitz constant
		Test
SUNDAY - 16.04.2023		
HOLIDAY - 14.04.2023 (DR.B.R.Ambedkar Jayanti)		
11	April (17-21)	Equivalent fractional ideals
		problem solving
		doubt class
		revision
		Ideal class group
SUNDAY - 23.04.2023		
Holiday Id-Ul-Fitr/Parshuram Jayanti (Saturaday)		
12	April (24-29)	Finiteness of the ideal class group
		class number of algebraic number field K
		Doubt class
		Diophantine equations minkowski's Bounds
		theorms based on minkowski's bounds
		Quadratic reciprocity Legendre symbols
SUNDAY - 30.04.2023		
13	May (1-6)	theorems based on quadratic reciprocity
		Gauss sums
		theorem related to gauss sum
		revision
		Law of quadratic reciprocity
		Quadratic fields
SUNDAY - 07.05.2023		
14	May (8-13)	Test
		Primes in special progression
		doubts class
		test
		problem solving
		REVISION
SUNDAY - 14.05.2023		
14	May (15-16)	REVISION
		REVISION
Examination 17.05.2023 Onwards.		

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LESSON PLAN

SESSION 2022-23 (01.02.2023 to 16.05.2023)

Weekly Lesson Plan Even Semester)

PG (IV - Semester)

Name of the Paper:- Boundary Value Problems Class: M.Sc. Mathematics

Name of the Teachers (Section Wise) : Sakshi Sharma

WEEK	DATE	TOPICS
1	February (1-4)	Initial value problem
		Initial value problem
		Final value problem
		Final value problem
SUNDAY - 05.02.2023 Holiday (Guru Ravidass Jayanti)		
2	February (6-11)	Transverse oscillation of a homogenous elastic bar
		Dirac Delta function
		Greens function approach for the operator L
		Solution of Self adjoint I.V.P.
		Examples
		Examples
SUNDAY - 12.02.2023		
3	February (13-17)	Solution of self adjoint B.V.P.
		Properties of Greens function
		Examples
		Examples
		nth order self adjoint B.V.P.
HOLIDAY - 18.02.2023 (Maha Shivratri)		
SUNDAY - 19.02.2023		
4	February (20-25)	nth order self adjoint B.V.P.
		Modified Greens function
		Modified Greens function
		Modified Greens function
		Problem Discussion
		Class test
SUNDAY - 26.02.2023		
5	February (27-28) March (1-4)	Application to partial differential equation
		Integral representation formula for the solution of Laplace Equation
		Integral representation formula for the solution of Poisson Equation
		The Newtonian , singkle-layer and double layer potentials
		Interior and Exterior Dirichlet problem
		Interior and Exterior Neumann problem
SUNDAY - 05.03.2023		
Holi Vacations - 05.03.2023 to 12.03.2023		
7	March (13-18)	Greens function for the laplace equation in a free space as well as in a space bounded by a green vessel
		Greens function for the laplace equation in a free space as well as in a space bounded by a green vessel
		Integral equation formula of boundary value problems for laplace equation
		Poissons integral formula
		Poissons integral formula
		greens function for the space bounded by grounded two parallel plates
SUNDAY - 19.03.2023		

8	March (20-25)	Helmholtz equation
		Helmholtz equation
		Problem discussion
		Integral Transform
		Integral Transform
SUNDAY - 26.03.2023		
HOLIDAY 23.03.2023 Shaheedi Diwas		
9	March (27-31) April (1)	Fourier transform
		Fourier transform
		Laplace transform
		Properties of Greens function
		Convolution integral
HOLIDAY - 30.03.2023 (Ram Navmi)		
SUNDAY - 02.04.2023		
9	April (3-8)	Application to volterra integral equations with convolution type kernel
		Hilbert transform
		Hilbert transform
		Examples
		Examples
HOLIDAY - 04.04.2023 (Mahavir Jayanti)		
SUNDAY - 09.04.2023		
10	April (10-15)	Two part boundary value problem
		Three part boundary value problem
		Three part boundary value problem
		Generalised three part boundary value problem
		Generalised three part boundary value problem
SUNDAY - 16.04.2023		
HOLIDAY - 14.04.2023 (DR.B.R.Ambedkar Jayanti)		
11	April (17-21)	Examples
		Problem discussion
		Class test
		Integral equation perturbation methods
		Integral equation perturbation methods
SUNDAY - 23.04.2023		
Holiday Id-Ul-Fitr/Parshuram Jayanti (Saturaday)		
12	April (24-29)	Basic procedure
		Application to electrostatics
		Application to electrostatics
		Application to electrostatics
		Low-Reynolds-Number hydrodynamics
		Low-Reynolds-Number hydrodynamics
SUNDAY - 30.04.2023		
13	May (1-6)	Steady stokes flow
		Boundary effects of stokes flow
		Longitudnal oscillations of solids in stokes flow
		Steady Rotary stokes flow
		Steady Rotary stokes flow
		Oseen flow
SUNDAY - 07.05.2023		
14	May (8-13)	Elasticity
		Boundary effects
		Boundary effects
		Torsion and Rotary oscillation problems in elasticity
		Cracks problem in elasticity
		Theory of Diffraction
SUNDAY - 14.05.2023		
14	May (15-16)	Problem discussion
		Problem discussion
Examination 17.05.2023 Onwards.		

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LESSON PLAN

SESSION 2022-23 (01.02.2023 to 16.05.2023)

Weekly Lesson Plan Even Semester)

PG (IV - Semester)

Name of the Paper:- Mathematical aspects of Seismology Class: M.Sc.- Final

Name of the Teachers (Section Wise) : Prof. Manish Kumar

WEEK	DATE	TOPICS
1	February (1-4)	General forms of prograssive waves
		basic defination of wave number ,wavelength etc…..
		Harmonic wave
		Plane wave ,the wave equation
SUNDAY - 05.02.2023 Holiday (Guru Ravidass Jayanti)		
2	February (6-11)	solution of one,two,three dimensional wave equation
		continued
		Principle of superposition
		Special type of solution
		Prograssive type solyution
		examples and theorem
SUNDAY - 12.02.2023		
3	February (13-17)	Stationary type solution for one dimensional
		Two dimensional wave equation
		Three dimensional wave equation
		examples and theorem
		examples and theorem
HOLIDAY - 18.02.2023 (Maha Shivratri)		
SUNDAY - 19.02.2023		
4	February (20-25)	Equation of Telegraphy
		Exponential forms of harmonic wave
		D Alembert formula
		Properties of formula
		Inhomogeneous wave equation
		Dispersion :Group velocity
SUNDAY - 26.02.2023		
5	February (27-28) March (1-4)	Relation between group and phase velocity
		examples and theorem
		revision
		Class test
		Reduction of equation of motion to wave equation
		Continued…
SUNDAY - 05.03.2023		
Holi Vacations - 05.03.2023 to 12.03.2023		
7	March (13-18)	Continued…
		P and S wave and their characterstic
		Polarisation of plane P and S wave
		Snell law of reflection and refrection
		Reflection of plane P and SV waves at a free surface
		continued..
SUNDAY - 19.03.2023		

8	March (20-25)	Continued…
		Partition of reflected energy
		Reflection at critical angles
		Reflection and reflection of plane P waves at a interface
		Reflection and refrection of plane SV waves at a interface
SUNDAY - 26.03.2023		
HOLIDAY 23.03.2023 Shaheedi Diwas		
9	March (27-31) April (1)	Reflection and refrection of plane SH waves at a interface
		Liquid-Liquid Interface
		Liquid-Solid Interface
		Solid-Solid interface
		Rayleign Waves
HOLIDAY - 30.03.2023 (Ram Navmi)		
SUNDAY - 02.04.2023		
9	April (3-8)	Continued
		Love Waves
		Stoneley waves
		Continued…
		Continued…
HOLIDAY - 04.04.2023 (Mahavir Jayanti)		
SUNDAY - 09.04.2023		
10	April (10-15)	Continued…
		revision
		Two dimensional Lamb problem in an isotropic elastic solid
		Continued….
		Area source and Line sources in an unlimited elastic solid
SUNDAY - 16.04.2023		
HOLIDAY - 14.04.2023 (DR.B.R.Ambedkar Jayanti)		
11	April (17-21)	Continued..
		Normal force acts on surface of a semi infinite elastic solid
		Continued…,
		Tangential force acting on the surface of semi infinite solid
		Three Dimensional Lambs problem in an isotropic solid
SUNDAY - 23.04.2023		
Holiday Id-Ul-Fitr/Parshuram Jayanti (Saturaday)		
12	April (24-29)	Area source and point source in an unlimited elastic solid
		Area source and point source on the surface of semi infinite
		Continued…
		Haskell matrix method for love waves
		Revision
		Class test
SUNDAY - 30.04.2023		
13	May (1-6)	Expansion of a spherical wave into plane wave
		Sommerfield integral
		Kirchoff solution of wave equation
		Poissons Formula
		Helmholtz Formula
		Revision
SUNDAY - 07.05.2023		
14	May (8-13)	Introduction to seismology
		Location of earthquake, aftershocks and Foreshocks
		Earthquake magnitude, seismic moment
		Energy released by earthquakes, observation of earthquake
		Interior of the earth
		Revision
SUNDAY - 14.05.2023		
14	May (15-16)	revision
		Class test
Examination 17.05.2023 Onwards.		