

Date: 13.04.2022

I.B. (PG) COLLEGE, PANIPAT
SESSION 2021-2022 (11.04.2022 to 19.07.2022)

Weekly Lesson Plan (Even Semester)

Name of the Paper:- ALGEBRAIC NUMBER THEORYClass: M.SC.(F)4th semName of the Teachers (Section wise): KOMAL VERMA

WEEK	DATE	TOPICS
1	April (11-16)	Introduction to Algebraic numbers and algebraic integers
		some results and theorem based upon algebraic number and algebraic integers
		Transcendental numbers
		theorem based on transcendental numbers
		oral test
HOLIDAY - 14th APRIL (Dr. B.R. Ambedkar Jayanti /Mahavir Jayanti)		
SUNDAY - 17.04.2022		
2	April (18-23)	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 - 24.04.2022		
3	April (25-30)	Test
		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
SUNDAY - 01.05.2021		
4	May (2, 4-7)	Assignment 1
		cyclotomic polynomials
		cyclotomic polynomial is monic., irreducible
		Liouville's Theorem for complex algebraic numbers
		Doubt class
HOLIDAY - 3rd May (Id-ul-Fitr / Parshuram Jayanti)		
SUNDAY - 08.05.2022		
5	May (9-14)	Minimal polynomial of an algebraic integer
		some prepositions
		Test
		Norm and Trace of algebraic numbers and algebraic integers
		Bilinear form on algebraic number field K
doubts class		
SUNDAY - 15.05.2022		

6	May (16-21)	Integral basis and discriminant of algebraic number field
		Index of an element of K
		Ring OK of algebraic integers of an algebraic number field K
		Test
		Ideals in the ring of algebraic number field K Integrally closed domains
SUNDAY - 22.05.2022		
7	May (23-28)	Integral basis and discriminant of algebraic number field
		Index of an element of K
		Ring OK of algebraic integers of an algebraic number field K
		Test
		Ideals in the ring of algebraic number field K Integrally closed domains
SUNDAY -29.05.2022		
8	May (30-31) June (1, 3-4)	Fractional ideals of K
		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
HOLIDAY - 02.06.2022 (Maharana Pratap Jayanti)		
SUNDAY - 05.06.2022		
9	June (6-11)	DOUBT CLASS
		Test
		Chinese remainder theorem
		Doubt class
		Different of an algebraic number field K
		Dedekind Theoem
SUNDAY - 12.06.2022		
10	June (13, 15-18)	doubt class
		test
		Euclidean Rings
		theorem related to previous topic
		revision
HOLIDAY -14.06.2022 (Sant Kabir Jayanti)		
SUNDAY - 19.06.2022		
11	June (20-25)	Hurwitz Lemma and Hurwitz constant
		Test
		Equivalent fractional ideals
		problem solving
		doubt class
		revision
SUNDAY - 26.06.2022		

12	June (27-30)	Ideal class group
		Finiteness of the ideal class group
		class number of algebraic number field K
	July (1-2)	Doubt class
		Assignment 2
		Diophantine equations minkowski's Bounds
SUNDAY - 03.07.2022		
13	July (4-9)	theorms based on minkowski's bounds
		Quadratic reciprocity Legendre symbols
		theorems based on quadratic reciprocity
		Gauss sums
		theorem related to gauss sum
		revision
SUNDAY & HOLIDAY (Id-ul-Zuha (Bakr-Id) - 10.07.2022		
14	July (11-16)	Law of quadratic reciprocity
		Quadratic fields
		Test
		Primes in special progression
		doubts class
		test
SUNDAY - 17.07.2022		
15	July (18-19)	problem solving
		REVISION
20.07.2022 - EXAMINATION ONWARDS		

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I.B. (PG) COLLEGE, PANIPAT
SESSION 2021-2022 (11.04.2022 to 19.07.2022)

Weekly Lesson Plan (Even Semester)

Name of the Paper:- Boundary Value Problems

Class: M.Sc. Mathematics (Final Year)(4th sem)

Name of the Teachers (Section wise): Sakshi Sharma

WEEK	DATE	TOPICS
1	April (11-16)	Initial value problem
		Initial value problem
		Initial value problem
		Final value problem
		Final value problem
HOLIDAY - 14th APRIL (Dr. B.R. Ambedkar Jayanti /Mahavir Jayanti)		
SUNDAY - 17.04.2022		
2	April (18-23)	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 - 24.04.2022		
3	April (25-30)	Solution of self adjoint B.V.P.
		Properties of Greens function
		Examples
		Examples
		nth order self adjoint B.V.P.
		nth order self adjoint B.V.P.
SUNDAY - 01.05.2021		
4	May (2, 4-7)	Modified Greens function
		Modified Greens function
		Modified Greens function
		Problem Discussion
		Class test
HOLIDAY - 3rd May (Id-ul-Fitr / Parshuram Jayanti)		
SUNDAY - 08.05.2022		
5	May (9-14)	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 , single-layer and double layer potentials
		Interior and Exterior Dirichlet problem
		Interior and Exterior Neumann problem
SUNDAY - 15.05.2022		

6	May (16-21)	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 - 22.05.2022		
7	May (23-28)	Helmholtz equation
		Helmholtz equation
		Problem discussion
		Revision
		Integral Transform
		Integral Transform
SUNDAY - 29.05.2022		
8	May (30-31) June (1, 3-4)	Fourier transform
		Fourier transform
		Laplace transform
		Properties of Greens function
		Convolution integral
HOLIDAY - 02.06.2022 (Maharana Pratap Jayanti)		
SUNDAY - 05.06.2022		
9	June (6-11)	Application to volterra integral equations with convolution type kernel
		Hilbert transform
		Hilbert transform
		Examples
		Examples
		Two part boundary value problem
SUNDAY - 12.06.2022		
10	June (13, 15-18)	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
HOLIDAY - 14.06.2022 (Sant Kabir Jayanti)		
SUNDAY - 19.06.2022		
11	June (20-25)	Examples
		Problem discussion
		Class test
		Integral equation perturbation methods
		Integral equation perturbation methods
		Basic procedure
SUNDAY - 26.06.2022		

12	June (27-30)	Basic procedure
		Application to electrostatics
	July (1-2)	Application to electrostatics
		Application to electrostatics
		Low-Reynolds-Number hydrodynamics
SUNDAY - 03.07.2022		
13	July (4-9)	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 & HOLIDAY (Id-ul-Zuha (Bakr-Id) - 10.07.2022		
14	July (11-16)	Elasticity
		Boundary effects
		Boundary effects
		Torsion and Rotary oscillation problems in elasticity
		Cracks problem in elasticity
		Theory of Diffraction
SUNDAY - 17.07.2022		
15	July (18-19)	Problem discussion
		Problem discussion
20.07.2022 - EXAMINATION ONWARDS		

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I.B. (PG) COLLEGE, PANIPAT
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Weekly Lesson Plan (Even Semester)

Name of the Paper:- General Measure And Integration Theory Class: M.Sc.- Final (4th sem)

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

WEEK	DATE	TOPICS
1	April (11-16)	Measures and its properties
		Outer measures
		Some results based on outer measures
		Extension of measures
		Uniqueness of extension
HOLIDAY - 14th APRIL (Dr. B.R. Ambedkar Jayanti /Mahavir Jayanti)		
SUNDAY - 17.04.2022		
2	April (18-23)	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
		Combinations of measurable functions
SUNDAY - 24.04.2022		
3	April (25-30)	Limits of measurable functions
		Localization of measurability
		Simple function
		Some more results of simple functions
		Test
		Section-II Measure spaces
SUNDAY - 01.05.2021		
4	May (2, 4-7)	Some more results of Measure spaces
		Almost everywhere convergence
		Some more results of Almost everywhere convergence
		Fundamental almost everywhere
		Some more results of fundamental almost everywhere
HOLIDAY - 3rd May (Id-ul-Fitr / Parshuram Jayanti)		
SUNDAY - 08.05.2022		
5	May (9-14)	Convergence in measure
		Fundamental in measure
		Some more results of fundamental in measure and convergence in measure
		Almost uniform convergence
		Egoroff's theorem
		Riesz-Weyl theorem
SUNDAY - 15.05.2022		

6	May (16-21)	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
		Integrable functions
SUNDAY - 22.05.2022		
7	May (23-28)	Some more results of Integrable functions
		Indefinite integrals
		Some more results of Indefinite integrals
		The monotone convergence theorem
		Mean convergence
		Some more results of Mean convergence
SUNDAY - 29.05.2022		
8	May (30-31) June (1, 3-4)	Problem Discussion
		Test
		Section-III Product Measures: Rectangles
		Some more results of Rectangles
		Cartesian product of two measurable spaces
HOLIDAY - 02.06.2022 (Maharana Pratap Jayanti)		
SUNDAY - 05.06.2022		
9	June (6-11)	Some more results of Cartesian product of two measurable spaces
		Measurable rectangle
		Some more results of measurable rectangle
		sections
		The product of two finite measure spaces
		Some more results of the product of two finite measure spaces
SUNDAY - 12.06.2022		
10	June (13, 15-18)	The product of any two measure spaces
		test
		product of two σ -finite measure spaces
		Iterated integrals
		Fubini's Theorem s
HOLIDAY - 14.06.2022 (Sant Kabir Jayanti)		
SUNDAY - 19.06.2022		
11	June (20-25)	A partial converse to the Fubini's theorem
		Signed Measure: Absolute continuity
		Finite signed measure
		Contractions of a finite signed measure
		Purely positive and purely negative sets
		some results on Purely positive and purely negative sets
SUNDAY - 26.06.2022		

12	June (27-30)	Comparison of finite measures
		Some more results of Comparison of finite measures
	July (1-2)	Lebesgue decomposition theorem, A preliminary Radon-Nikodym theorem,
		Hahn decomposition, Jordan decomposition
		upper variation, Lower variation, total variation, domination of finite signed
The Radon-Nikodym theorem for a finite measure space,		
SUNDAY - 03.07.2022		
13	July (4-9)	section IV : Integration over locally compact spaces: Continuous functions
		with compact support,
		Baire sets
		Baire function
		Baire-sandwich theorem
Baire measure		
SUNDAY & HOLIDAY (Id-ul-Zuha (Bakr-Id) - 10.07.2022		
14	July (11-16)	Borel sets
		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		
SUNDAY - 17.07.2022		
15	July (18-19)	Integration of continuous functions with compact support
		Riesz-Markoff's theorem
20.07.2022 - EXAMINATION ONWARDS		

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Weekly Lesson Plan (Even Semester)

Name of the Paper:-_Integral Equation Class: _MSC (f)(4th sem)

Name of the Teachers (Section wise): _MANISH KUMAR

WEEK	DATE	TOPICS
1	April (11-16)	General forms of prograssive waves
		basic defination of wave number ,wavelength etc.....
		Harmonic wave
		Plane wave ,the wave equation
		solution of one,two,three dimensional wave equation
HOLIDAY - 14th APRIL (Dr. B.R. Ambedkar Jayanti /Mahavir Jayanti)		
SUNDAY - 17.04.2022		
2	April (18-23)	continued
		Principle of superposition
		Special type of solution
		Prograssive type solyution
		examples and theorem
		examples and theorem
SUNDAY - 24.04.2022		
3	April (25-30)	Stationary type solution for one dimensional
		Two dimensional wave equation
		Three dimensional wave equation
		examples and theorem
		examples and theorem
SUNDAY - 01.05.2021		
4	May (2, 4-7)	Equation of Telegraphy
		Exponential forms of harmonic wave
		D Alembert formula
		Properties of formula
HOLIDAY - 3rd May (Id-ul-Fitr / Parshuram Jayanti)		
SUNDAY - 08.05.2022		
5	May (9-14)	Inhomogeneous wave equation
		Dispersion :Group velocity
		Relation between group and phase velocity
		examples and theorem
		revision
		Class test
SUNDAY - 15.05.2022		

6	May (16-21)	Reduction of equation of motion to wave equation
		Continued...
		Continued...
		P and S wave and their characteristic
		Polarisation of plane P and S wave
SUNDAY - 22.05.2022		
7	May (23-28)	Snell law of reflection and refraction
		Reflection of plane P and SV waves at a free surface
		continued..
		Continued..
		Continued...
SUNDAY - 29.05.2022		
8	May (30-31) June (1, 3-4)	Partition of reflected energy
		Reflection at critical angles
		Reflection and refraction of plane P waves at a interface
		Reflection and refraction of plane SV waves at a interface
		Reflection and refraction of plane SH waves at a interface
HOLIDAY - 02.06.2022 (Maharana Pratap Jayanti)		
SUNDAY - 05.06.2022		
9	June (6-11)	Liquid-Liquid Interface
		Liquid-Solid Interface
		Solid-Solid interface
		Rayleigh Waves
		Continued
SUNDAY - 12.06.2022		
10	June (13, 15-18)	Love Waves
		Stoneley waves
		Continued...
		Continued...
		revision
HOLIDAY - 14.06.2022 (Sant Kabir Jayanti)		
SUNDAY - 19.06.2022		
11	June (20-25)	Two dimensional Lamb problem in an isotropic elastic solid
		Continued....
		Area source and Line sources in an unlimited elastic solid
		Continued..
		Normal force acts on surface of a semi infinite elastic solid
Continued...,		
SUNDAY - 26.06.2022		

12	June (27-30)	Tangential force acting on the surface of semi infinite solid
		Three Dimensional Lambs problem in an isotropic solid
	July (1-2)	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	
SUNDAY - 03.07.2022		
13	July (4-9)	Revision
		Class test
		Expansion of a spherical wave into plane wave
		Sommerfield integral
		Kirchoff solution of wave equation
		Poissons Formula
SUNDAY & HOLIDAY (Id-ul-Zuha (Bakr-Id) - 10.07.2022		
14	July (11-16)	Helmholtz Formula
		Introduction to seismology
		Location of earthquake, aftershocks and Foreshocks
		Earthquake magnitude, seismic moment
		Energy released by earthquakes, observation of earthquake
		Interior of the earth
SUNDAY - 17.07.2022		
15	July (18-19)	revision
		Class test
20.07.2022 - EXAMINATION ONWARDS		

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Weekly Lesson Plan (Even Semester)

Name of the Paper:-Partial Differential Equation

Class: M.Sc Final (4th sem)

Name of the Teachers (Section wise): _Prof. Sourav

WEEK	DATE	TOPICS
1	April (11-16)	Definition, Examples and classification of PDE of kth order
		Definition, Examples and classification of PDE of kth order
		Initial Value Problems
		Homogeneous Transport Equation
		Non Homogeneous Transport Equation
HOLIDAY - 14th APRIL (Dr. B.R. Ambedkar Jayanti / Mahavir Jayanti)		
SUNDAY - 17.04.2022		
2	April (18-23)	Radial Solution of Laplace Equation
		Radial Solution of Laplace Equation
		Fundamental Solutions
		Harmonic Functions
		Properties of Harmonic functions
		Properties of Harmonic functions
SUNDAY - 24.04.2022		
3	April (25-30)	Mean Value Formulas
		Related theorems
		Poisson's equation and its Solution
		Poisson's equation and its Solution
		Problems Discussion
		Strong Maximum Principle
SUNDAY - 01.05.2021		
4	May (2, 4-7)	Uniqueness of Strong maximum principle
		Local Estimate for Harmonic functions
		Local Estimate for Harmonic functions
		Liouville's Theorem
		Harnack's Inequality
HOLIDAY - 3rd May (Id-ul-Fitr / Parshuram Jayanti)		
SUNDAY - 08.05.2022		
5	May (9-14)	Problems Discussion
		Test
		Green Function and its Derivation
		Representation Formula using Green function
		Representation Formula using Green function
		Symmetry of Green's function
SUNDAY - 15.05.2022		

6	May (16-21)	Green Function for a Half Space
		Green Function for a Ball
		Energy Methods
		Uniqueness of energy Methods
		Dirichlet Principle
		Heat Equations
SUNDAY - 22.05.2022		
7	May (23-28)	Physical interpretation of Heat Equations
		Fundamental solution of Heat Equation
		Fundamental solution of Heat Equation
		Integral of Fundamental Solution
		Solution of Initial value Problem
		Duhamel's Principle
SUNDAY - 29.05.2022		
8	May (30-31) June (1, 3-4)	Duhamel's Principle
		Non Homogeneous Heat Equation
		Mean Value Formula for Heat Equation
		Mean Value Formula for Heat Equation
		Strong Maximum Principle
HOLIDAY - 02.06.2022 (Maharana Pratap Jayanti)		
SUNDAY - 05.06.2022		
9	June (6-11)	Uniqueness of Strong Maximum Principle
		Uniqueness of Strong Maximum Principle
		Energy Methods
		Related theorems
		Problems Discussion
		Test
SUNDAY - 12.06.2022		
10	June (13, 15-18)	Wave Equation
		Physical interpretation of Wave Equations
		Solution of one dimensional wave equation
		D'alembert formula
		Applications of D'alembert principle
HOLIDAY - 14.06.2022 (Sant Kabir Jayanti)		
SUNDAY - 19.06.2022		
11	June (20-25)	Reflection Method
		Reflection Method
		Solution by Spherical means
		Solution by Spherical means
		Euler Poission Darboux equation
		Kirchhoff's Formula
SUNDAY - 26.06.2022		

12	June (27-30)	Poission's Formula
		Poission's Formula
	July (1-2)	Solution of Non Homogeneous Wave Equation for $n=1$
		Solution of Non Homogeneous Wave Equation for $n=3$
		Energy Methods
		Uniqueness of Solution
SUNDAY - 03.07.2022		
13	July (4-9)	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
		Legendre Transform
SUNDAY & HOLIDAY (Id-ul-Zuha (Bakr-Id) - 10.07.2022		
14	July (11-16)	Plane and Travelling Waves
		Similarity under Scaling
		Fourier Transform
		Laplace Transform
		Conversion of Non Linear into linear PDE
		Hodograph and Legendre Transforms
SUNDAY - 17.07.2022		
15	July (18-19)	Problems Discussion
		Problems Discussion
20.07.2022 - EXAMINATION ONWARDS		