

**I.B. (PG) COLLEGE, PANIPAT**  
**(SESSION 2019-20)**

Weekly Lesson Plan (January 2020 - April 2020)

Name of the Paper:- Algebraic Number Theory

Class:-M.Sc.(F)

Name of the Teachers (Section wise): Ms. MEENU DEVI

WEEK	DATE	TOPICS
1	January (1 - 4)	Algebraic numbers and integers
		Liouville's theorem for real algebraic numbers
		Thue theorem and Roth's theorem
		Algebraic number field
<b>SUNDAY - 05.01.2020</b>		
2	January (6-11)	Theorem of primitive elements
		More theorems
		More theorems
		Liouville's theorem for complex algebraic numbers
		Minimal polynomial of an algebraic integer
		Examples
<b>SUNDAY - 12.01.2020</b>		
3	January (13-18)	Test
		Primitive m-th roots of unity
		Some theorems
		Cyclotomic Polynomials
		Related results
		Related results
<b>SUNDAY - 19.01.2020</b>		
4	January (20 -25)	Norm of algebraic numbers,integers
		Some Results
		Trace of algebraic numbers,integers
		Some Results
		Some Results
		Bilinear form on algebraic number field K
<b>January - 26.01.2020</b>		
5	January (27- 31) February (1)	Some Results
		Some Results
		Test
		Integral Basis
		Discriminant of an algebraic number field
		Some Results
<b>SUNDAY - 02.02.2020</b>		
6	February (3 -8)	Some Results
		Index of an element
		Ring of algebraic integers
		Some Results
		Some Results
		Ideals

SUNDAY - 09.02.2020		
7	February (10 -15)	Some Results
		Integrally closed domains
		Dedekind Domains
		Fractional ideals of K
		Some Results
SUNDAY - 16.02.2020		
8	February (17-22)	Test
		Factorization of ideals
		Related results
		Related results
		Related results
SUNDAY - 23.02.2020		
9	February (24-29)	G.C.D. of ideals
		L.C.M. of ideals
		Some Results
		Some Results
		Chinese Remainder Theorem
SUNDAY - 01.03.2020		
10	March (02 -07)	Different of an algebraic number field
		Related theorems
		Related theorems
		Problem discussion
		Dedekind theorem
SUNDAY - 08.03.2020		
11	March (09 -14)	<b>HOLI VACATIONS</b>
		<b>HOLI VACATIONS</b>
		<b>HOLI VACATIONS</b>
		<b>HOLI VACATIONS</b>
		<b>HOLI VACATIONS</b>
SUNDAY - 15.03.2020		
12	March (16 -21)	Related theorems
		Related theorems
		Test
		Hurwitz Lemma
		Hurwitz constant
SUNDAY - 22.03.2020		
13	March (23-28)	Related theorems
		Ideal class group
		Related theorems
		Finiteness of the ideal class group
		Class number of the algebraic number field
SUNDAY - 29.03.2020		
14	March (30-31)	Related theorems
		Related theorems
		Related theorems
		Related theorems
		Related theorems

<b>SUNDAY - 29.03.2020</b>		
<b>14</b>	March (30 -31) April 1-4)	Related theorems
		Related theorems
		Problem discussion
		Test
		Diophantine equatons
		Examples
<b>SUNDAY - 05.04.2020</b>		
<b>15</b>	April (06 -11)	Minkowski,s bound
		Related theorems
		Related theorems
		Examples
		Quadratic reciprocity
		Legendre Symbol
<b>SUNDAY - 12.04.2020</b>		
<b>16</b>	April (13-18)	Some theorems
		Some theorems
		Gauss sums
		Some theorems
		Some theorems
		Problem discussion
<b>SUNDAY - 19.04.2020</b>		
<b>17</b>	April (20-25)	Test
		Law of quadratic reciprocity
		Examples
		Examples
		Examples
		Quadratic fields
<b>SUNDAY - 26.04.2020</b>		
<b>18</b>	April (27-30)	Primes in special progression
		Examples
		Examples
		Problem discussion

**I.B. (PG) COLLEGE, PANIPAT**  
**(SESSION 2019-20)**

Weekly Lesson Plan (January 2020 - April 2020)

Name of the Paper:- **General Measure and Integration theory**

Class:M.Sc (F)

Name of the Teachers (Section wise): **Ms. Anchal Jain**

WEEK	DATE	TOPICS
1	January (1 - 4)	Measures and its properties
		Outer measures
		Some results based on outer measures
		Extension of measures
<b>SUNDAY - 05.01.2020</b>		
2	January (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
<b>SUNDAY - 12.01.2020</b>		
3	January (13-18)	Some more results of Measurable functions
		Combinations of measurable functions
		Limits of measurable functions
		Localization of measurability
		Simple function
		Problem Discussion
<b>SUNDAY - 19.01.2020</b>		
4	January (20 -25)	Some more results of simple functions
		Test
		Section-II Measure spaces
		Some more results of Measure spaces
		Some more results of Measure spaces
		Almost everywhere convergence
<b>January - 26.01.2020</b>		
5	January (27- 31) February (1)	Some more results of Almost everywhere convergence
		Fundamental almost everywhere
		Some more results of fundamental almost everywhere
		Some more results of fundamental almost everywhere
		Convergence in measure
		Problem Discussion
<b>SUNDAY - 02.02.2020</b>		
6	February (3 -8)	Fundamental in measure
		Some more results of fundamental in measure and convergence in measure
		Some more results of fundamental in measure and convergence in measure
		Almost uniform convergence
		Egoroff's theorem
		Riesz-Weyl theorem
<b>SUNDAY - 09.02.2020</b>		
7	February (10 -15)	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

<b>SUNDAY - 16.02.2020</b>		
<b>8</b>	February (17-22)	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
<b>SUNDAY - 23.02.2020</b>		
<b>9</b>	February (24-29)	Problem Discussion
		Test
		Section-III Product Measures:Rectangles
		Some more results of Rectangles
		Cartesian product of two measurable spaces
		Some more results of Cartesian product of two measurable spaces
<b>SUNDAY - 01.03.2020</b>		
<b>10</b>	March (02 -07)	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
		The product of any two measure spaces
<b>SUNDAY - 08.03.2020</b>		
<b>11</b>	March (09 -14)	<b>Holi Vacations</b>
		<b>Holi Vacations</b>
		<b>Holi Vacations</b>
		<b>Holi Vacations</b>
		<b>Holi Vacations</b>
		<b>Holi Vacations</b>
<b>SUNDAY - 15.03.2020</b>		
<b>12</b>	March (16 -21)	test
		product of two $s$ - finite measure spaces
		Iterated integrals
		Fubini's Theorem $s$
		A partial converse to the Fubini's theorem
		Signed Measure: Absolute continuity
<b>SUNDAY - 22.03.2020</b>		
<b>13</b>	March (23-28)	Finite signed measure
		Contractions of a finite signed measure
		Purely positive and purely negative sets
		some results on Purely positive and purely negative sets
		Comparison of finite measures
		Some more results of Comparison of finite measures
<b>SUNDAY - 29.03.2020</b>		
<b>14</b>	March (30 -31) April 1-4)	Lebesgue decomposition theorem,A preliminary Radon-Nikodym theorem,
		Hahn decomposition, Jordan decomposition
		upper variation,Lower variation, total variation, domination of finite signed
		measures,some more examples on upper variation,Lower variation,
		total variation, domination of finite signed
<b>SUNDAY - 05.04.2020</b>		
<b>15</b>	April (06 -11)	The Radon-Nikodym theorem for a finite measure space,
		the Radon-Nikodym theorem for a $s$ - finite measure space
		Problem Discussion
		section IV : Integration over locally compact spaces: Continuous functions
		with compact support,

<b>SUNDAY - 12.04.2020</b>		
<b>16</b>	April (13-18)	Baire sets
		Baire function
		Baire-sandwich theorem
		Baire measure
		Borel sets
		Some results of Borel sets
<b>SUNDAY - 19.04.2020</b>		
<b>17</b>	April (20-25)	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
<b>SUNDAY - 26.04.2020</b>		
<b>18</b>	April (27-30)	Some results of Integration of continuous functions with compact support
		Riesz-Markoff's theorem
		Revision

**I.B. (PG) COLLEGE, PANIPAT**  
**(SESSION 2019-20)**

Weekly Lesson Plan (January 2020 - April 2020)

Name of the Paper:- **BOUNDARY VALUE PROBLEM**

Class : **M.Sc.(F)**

Name of the Teachers (Section wise): **Mr.Manish kumar**

WEEK	DATE	TOPICS
1	January (1 - 4)	Application to ordinary differential equation
		Initial value problems
		Boundary value problems
<b>SUNDAY - 05.01.2020</b>		
2	January (6-11)	Dirac-delta functions
		Theorems
		Green function approach to reduce boundary value problem
		Of a self adjoint differential equation with homogenous bvp
		theorems
<b>SUNDAY - 12.01.2020</b>		
3	January (13-18)	Some more theorems
		Examples based on topic
		Continued
		Theorems
		Discussion
<b>SUNDAY - 19.01.2020</b>		
4	January (20 -25)	Green function for n-ordinary differential equation
		Theorems based on topic
		Continued
		Modified green function
		Problem discussion
<b>January - 26.01.2020</b>		
5	January (27- 31) February (1)	Application to Partial differential equation
		Integral representation formulas for laplace equation
		Theorems based on topic
		Discussion
<b>SUNDAY - 02.02.2020</b>		
6	February (3 -8)	Integral representation formulas for poisson equation
		The Newtonian single layer potential
		The Newtonian double layer potential
		Interior and Exterior Dirichlet Problems

SUNDAY - 09.02.2020		
7	February (10 -15)	Interior and Exterior neumann Problems
		Green function for laplaces equation in a free space
		Green function for laplaces equation in a space bounded by vessel
		Theorem related to topic
		Examples based on topic
SUNDAY - 16.02.2020		
8	February (17-22)	Integral equation formulation of BVP for laplace equation
		Poission's integral formula
		Green function for the space bounded by two parallel plates
		Related theorems and examples
SUNDAY - 23.02.2020		
9	February (24-29)	Green function for the space bounded by infinite circular cylinder
		The Helmholtz equation
		Related theorems and examples
		Discussion
		Class test
SUNDAY - 01.03.2020		
10	March (02 -07)	Integral transform method
		Fourier transform
		Laplace transform
		Related theorems and examples
		Discussion
SUNDAY - 08.03.2020		
11	March (09 -14)	<b>Holi Break</b>
		<b>Holi Break</b>
		<b>Holi Break</b>
		<b>Holi Break</b>
		<b>Holi Break</b>
		<b>Holi Break</b>
SUNDAY - 15.03.2020		
12	March (16 -21)	Convolution integral
		Application To volterra integal equation with convolution type kernals
		Hilberts transform
		Related theorems and examples
		Discussion
SUNDAY - 22.03.2020		
13	March (23-28)	Application to mixed boundary value problem
		Two part boundary value problems
		Three part boundary value problems
		Related theorems and examples

<b>SUNDAY - 29.03.2020</b>		
<b>14</b>	March (30 -31) April 1-4)	Generalized three part boundary value problem
		Related theorems and examples
		Related theorems and examples
		Discussion
		Class test
<b>SUNDAY - 05.04.2020</b>		
<b>15</b>	April (06 -11)	Integral equation perturbation method
		Basic procedure
		Application to electrostatics
		Low reynolds number hydrodynamic
		Related theorems and examples
<b>SUNDAY - 12.04.2020</b>		
<b>16</b>	April (13-18)	Steady stocks flow
		Boundary effects on stokes law
		Longitudnal oscillations of solids in stokes
		Steady rotary stocks flow
		Related theorems and examples
<b>SUNDAY - 19.04.2020</b>		
<b>17</b>	April (20-25)	Rotary oscillations in stokes flow
		Oseen flow translation motion
		Oseen flow rotary motion elasticity
		Boundary effects
		Rotation,theory of diffraction
<b>SUNDAY - 26.04.2020</b>		
<b>18</b>	April (27-30)	Torsion and Rotary oscillation in elasticity
		Crack problems in elasticity
		Discussion

**I.B. (PG) COLLEGE, PANIPAT**  
**(SESSION 2019-20)**

**Weekly Lesson Plan (January 2020 - April 2020)**

**Name of the Paper:- Seismology                      Class : M.sc(F)**

**Name of the Teachers (Section wise): Mr Manish kumar**

WEEK	DATE	TOPICS
1	January (1 - 4)	Basic definition
		General form of progressive wave, Harmonic Wave
		Plane waves ,the wave equation
<b>SUNDAY - 05.01.2020</b>		
2	January (6-11)	Principle of superposition, special types of solutions
		Progressive type solution of wave equation in one dimension
		Solution of wave equation in two dimensional
		Some more theorem
		Example based on topic
		Stationary type solution of one dimensional
<b>SUNDAY - 12.01.2020</b>		
3	January (13-18)	Solution of two dimensional
		Some more theorem
		Example based on topic
		Equation of telegraphy
		Exponential form of harmonic waves
		D'Alembert's formula
<b>SUNDAY - 19.01.2020</b>		
4	January (20 -25)	Example based on formula
		Some more theorem
		Inhomogenous wave equation
		Group velocity
		Relation between group and phase velocity
		Some more theorem

<b>January - 26.01.2020</b>		
<b>5</b>	January (27- 31) February (1)	Example and proposition
		Discussion on the complete chapter
		Basic about motion ,reflection,refraction of wave
		Reduction of equation of motion to wave equation
		P and S waves and their characteristic
		Same topic continued
<b>SUNDAY - 02.02.2020</b>		
<b>6</b>	February (3 -8)	Polarization of plane P and Waves
		Snell 's law of reflection and refraction
		Reflection of plane P wave at a free surface
		Reflection of plane SVwaveat a free surface
		Partition of reflected energy
<b>SUNDAY - 09.02.2020</b>		
<b>7</b>	February (10 -15)	Reflection at critical angles
		Reflection of plane P wave at an interface
		Reflection of plane SV wave at an interface
		Reflection of plane SH wave at an interface
		Refraction of plane P wave at an interface
		Discussion the topic based on conditional
<b>SUNDAY - 16.02.2020</b>		
<b>8</b>	February (17-22)	Conditional test
		Refraction of plane SH wave at an interface
		Refraction of plane SV wave at an interface
		Liquid –liquid interface
		Liquid –Solid interface
		Solid –Solid interface

SUNDAY - 23.02.2020		
9	February (24-29)	Rayleigh waves
		Love waves
		Stoneley waves
		Discussion on complete chapter
		Two dimensional lamb's problems in an isotropic elastic solid
		Area source and line sources in an unlimited elastic solid
SUNDAY - 01.03.2020		
10	March (02 -07)	A normal force acts on the surface of a semi infinite elastic solid
		Tangential forces act on the surface of a semi -infinite elastic solid
		Three dimensional lamb's problems in an isotropic elastic solid
		Area source and point source on the surface of semi-infinite elastic solid
		Continued same topic
		Some more theorem
SUNDAY - 08.03.2020		
11	March (09 -14)	<b>Holi Break</b>
		<b>Holi Break</b>
		<b>Holi Break</b>
		<b>Holi Break</b>
		<b>Holi Break</b>
		<b>Holi Break</b>
SUNDAY - 15.03.2020		
12	March (16 -21)	Haskell matrix method for love waves in multilayered medium
		Same topic continued
		Some lemma and example
		Discussion on the complete chapter
		Spherical waves
		Theorem based on spherical waves

SUNDAY - 22.03.2020		
13	March (23-28)	Expansion of a spherical wave into planes waves
		Same topic continued
		Problem discussion
		Problem discussion
		Class test
SUNDAY - 29.03.2020		
14	March (30 -31) April 1-4)	Sommerfield's integral
		Same topic continued
		Some more Theorems
		Same formula continued
		Discussion on topic based on conditional
SUNDAY - 05.04.2020		
15	April (06 -11)	kirchoff's solution of the wave equation
		Same topic continued
		Poissons 's formula
		Discussion on topics
SUNDAY - 12.04.2020		
16	April (13-18)	Helmholtz 's formula
		Same formula continued
		Discussion on topic based on conditional
		Conditional test

**SUNDAY - 19.04.2020**

<b>17</b>	April (20-25)	Some basic theorem
		Location of earthquakes
		Aftershocks and foreshocks
		Earth quake magnitude
		Seismic moment and theorem
		Energy released by earth quakes

**SUNDAY - 26.04.2020**

<b>18</b>	April (27-30)	Observation of Earthquakes
		Interior of the earth
		Problem discussion on complete chapter

**I.B. (PG) COLLEGE, PANIPAT**  
**(SESSION 2019-20)**

Weekly Lesson Plan (January 2020 - April 2020)

Name of the Paper:- **PARTIAL DIFFERENTIAL EQUATIONS**

Class:- **M.Sc (F)**

Name of the Teacher (Section wise): **GITIKA DUREJA**

WEEK	DATE	TOPICS
1	January (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
<b>SUNDAY - 05.01.2020</b>		
2	January (6-11)	Non Homogeneous Transport Equation
		Radial Solution of Laplace Equation
		Radial Solution of Laplace Equation
		Fundamental Solutions
		Harmonic Functions
<b>SUNDAY - 12.01.2020</b>		
3	January (13-18)	Properties of Harmonic functions
		Mean Value Formulas
		Related theorems
		Poisson's equation and its Solution
		Poisson's equation and its Solution
<b>SUNDAY - 19.01.2020</b>		
4	January (20 -25)	Strong Maximum Principle
		Uniqueness of Strong maximum principle
		Local Estimate for Harmonic functions
		Local Estimate for Harmonic functions
		Liouville's Theorem
<b>January - 26.01.2020</b>		
5	January (27- 31) February (1)	Problems Discussion
		Test
		Green Function and its Derivation
		Representation Formula using Green function
		Representation Formula using Green function
<b>SUNDAY - 02.02.2020</b>		
6	February (3 -8)	Green Function for a Half Space
		Green Function for a Ball
		Energy Methods
		Uniqueness of energy Methods
		Dirichlet Principle
<b>SUNDAY - 09.02.2020</b>		
7	February (10 -15)	Physical interpretation of Heat Equations
		Fundamental solution of Heat Equation
		Fundamental solution of Heat Equation
		Integral of Fundamental Solution
		Solution of Initial value Problem
<b>Duhamel's Principle</b>		

<b>SUNDAY - 16.02.2020</b>		
8	February (17-22)	Duhamel's Principle
		Non Homogeneous Heat Equation
		Mean Value Formula for Heat Equation
		Mean Value Formula for Heat Equation
		Strong Maximum Principle
		Uniqueness of Strong Maximum Principle
<b>SUNDAY - 23.02.2020</b>		
9	February (24-29)	Uniqueness of Strong Maximum Principle
		Energy Methods
		Related theorems
		Problems Discussion
		Test
		Wave Equation
<b>SUNDAY - 01.03.2020</b>		
10	March (02 -07)	Physical interpretation of Wave Equations
		Solution of one dimensional wave equation
		D'alembert formula
		Applications of D'alembert principle
		Reflection Method
		Reflection Method
<b>SUNDAY - 08.03.2020</b>		
11	March (09 -14)	<b>HOLI VACATIONS</b>
		<b>HOLI VACATIONS</b>
		<b>HOLI VACATIONS</b>
		<b>HOLI VACATIONS</b>
		<b>HOLI VACATIONS</b>
		<b>HOLI VACATIONS</b>
<b>SUNDAY - 15.03.2020</b>		
12	March (16 -21)	Solution by Spherical means
		Solution by Spherical means
		Euler Poission Darboux equation
		Kirchhoff's Formula
		Poission's Formula
		Poission's Formula
<b>SUNDAY - 22.03.2020</b>		
13	March (23-28)	Solution of Non Homogeneous Wave Equation for n=1
		Solution of Non Homogeneous Wave Equation for n=3
		Energy Methods
		Uniqueness of Solution
		Finite Propagation speed of Wave equation
		Finite Propagation speed of Wave equation
<b>SUNDAY - 29.03.2020</b>		
14	March (30 -31) April 1-4)	Non Linear first order Partial Differential Equations
		Complete Integrals
		Characteristics of Linear, quasilinear and fully non linear PDE
		Legendre Transform
		Hopf-Lax Formula
		Problems Discussion
<b>SUNDAY - 05.04.2020</b>		
15	April (06 -11)	Test
		Conservative Laws
		Related theorems
		Seperation of Variables
		Similarity Solutions
		Plane and Travelling Waves

<b>SUNDAY - 12.04.2020</b>		
<b>16</b>	April (13-18)	Solitones
		Similarity under Scaling
		Similarity under Scaling
		Fourier Transform
		Fourier Transform
<b>SUNDAY - 19.04.2020</b>		
<b>17</b>	April (20-25)	Laplace Transform
		Laplace Transform
		Laplace Transform
		Conversion of Non Linear into linear PDE
		Conversion of Non Linear into linear PDE
		Cole-Hop Transform
<b>SUNDAY - 26.04.2020</b>		
<b>18</b>	April (27-30)	Potential functions
		Hodograph and Legendre Transforms
		Problems Discussion
		Test