I.B. (PG) COLLEGE, PANIPAT
SESSION 2020-2021

Weekly Lesson Plan (Even Semester) **PG** **(4thSemester)**

Name of the Paper:-_Algebraic number theory ___ Class: M. SC mathemarics Final

Name of the Teachers (Section wise): _Komal

WEEK	DATE	TOPICS
1	April (19-20) , (22-24)	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
		oral test
HOIDAY - 21.04.2021 (Ram Navami)		
SUNDAY & Holiday (Mahavir Jayanti) 25.04.2021		
2	April (26 -30)	Liouville's theorem for real algebraic numbers
		Doubt class
		Thue Theorem and Roth's Theorem
		Doubt class
	May (Ist)	Algebraic number field K
		theorem based upon algebraic number field
SUNDAY - 02.05.2021		
3	May (03 - 08)	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 - 09.05.2021		
4	May (10-13) (15)	Assignment 1
		cyclotomic poynomials
		cyclotomic polynoimal is monic., irreducible
		Liouville's Theorem for complex algebraic numbers
		Doubt class
HOLIDAY - 14.05.2021 (Id-ul-Fitr / Parshuram Jayanti)		
SUNDAY - 16.05.2021		
5	May (17-22)	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 - 23.05.2021		
6	**May (24-29)**	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 - 30.05.2021		
7	**May (31)** **June (1 - 5)**	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
		doubt class
SUNDAY - 06.06.2021		
8	**June (7-12)**	test
		Chinese remainder theorem
		Doubt class
		Different of an algebraic number field K
		Dedekind Theoem
		doubt class
SUNDAY & Holiday (Maharana Pratap Jayanti) 13.06.2021		
9	**June (14 -19)**	Euclidean Rings
		theorem related to previous topic
		Hurwitz Lemma and Hurwitz constant
		Test
		Equivalent fractional ideals
		problem solving
SUNDAY - 20.06.2021		
10	**June (21-23)** **(25 - 26)**	Ideal class group
		Finiteness of the ideal class group
		class number of algebraic number field K
		Doubt class
		Assignment 2
HOLIDAY - 24.06.2021 (Sant Kabir Jayanti)		
SUNDAY - 27.06.2021		
11	**June (28-30)** **July (1-3)**	Diophantine equations minkowski's Bounds
		theorms based on minkowski's bounds
		Quadratic reciprocity Legendre symbols
		theorems based on quadratic reciprocity
		Gauss sums
		theorem related to gauss sum

SUNDAY - 04.07.2021		
12	July (5 - 10)	Test
		Law of quadratic reciprocity
		Quadratic fields
		Test
		Primes in special progression
		doubts class
SUNDAY - 11 .07.2021		
13	July (12)	problem solving

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Weekly Lesson Plan (Even Semester) **PG** **(4thSemester)**

Name of the Paper:-__General Measure and Integration Theory__

Class: M.Sc. Mathematics (Final)

Name of the Teachers (Section wise): __Komal

WEEK	DATE	TOPICS
1	April (19-20) , (22-24)	general introduction to measures theory
		some properties of measures
		extension of measures.
		uniqueness of extensions.
		doubt class
HOIDAY - 21.04.2021 (Ram Navami)		
SUNDAY & Holiday (Mahavir Jayanti) 25.04.2021		
2	April (26 -30)	the LUB of an increasingly directed family of measures
		revison of all the topics we studied.
		Measurable functions
		theorm related to measurable functions
		combinations of measurable functions
	May (Ist)	doubt class
SUNDAY - 02.05.2021		
3	May (03 - 08)	limits of measurable functions
		localization of measurability
		simple functions
		theorm related to simple functions
		doubt class
		test of section 1
SUNDAY - 09.05.2021		
4	May (10-13) (15)	Measure spaces
		almost everywhere convergence
		fundamental almost everywhere convergence in measure
		fundamental in measure
		almost uniform convergenc,Egoroff's theorem
HOLIDAY - 14.05.2021 (Id-ul-Fitr / Parshuram Jayanti)		
SUNDAY - 16.05.2021		
5	May (17-22)	Riesz- Weyl theorem
		Integration with respect to a measure
		integrable simple functions, non negative integrable functions
		integrable functions, indefinite integrals.
		the monotone convergence theorm, mean convergence
		section 2 test

SUNDAY - 23.05.2021		
6	**May (24-29)**	product measure, rectangles
		Cartesian product of two measurable spaces
		Mesurable rectangle, sections, the product of two finite measure spaces
		the product of any two finite measure spaces
		product of two sigma finite measure spaces: iterated integrals
		Fubini's theorem,a partial converse to the Fubini's theorem
SUNDAY - 30.05.2021		
7	**May (31)** **June (1 - 5)**	doubt class
		Signed measure
		Absolute continuity, finite signed measure
		contractions of finite signed measure
		purely positive and purely negative sets
		comparison of finite measure
SUNDAY - 06.06.2021		
8	**June (7-12)**	Lebegue decomposition theorem
		a preliminary Radon- Nikodym theorem
		Hahn decomposition theorem
		jordan decompostion theorem
		upper variation
		lower variation
SUNDAY & Holiday (Maharana Pratap Jayanti) 13.06.2021		
9	**June (14 -19)**	total variation
		doubt class doubt class
		assignment 1
		domination of finite signed measure
		Radyon - Nikodym theorem for a finite measure space
SUNDAY - 20.06.2021		
10	**June (21-23)** **(25 - 26)**	surprise test
		Revision of chapter 2
		the Radon - Nikodym theorem for sigma finite measure space
		doubt class
		assignment 2
HOLIDAY - 24.06.2021 (Sant Kabir Jayanti)		
SUNDAY - 27.06.2021		
11	**June (28-30)** **July (1-3)**	test (first half portion of section 3)
		test (second half portion of section 3)
		integration over locally compact spaces
		continuous functions with compact support
		G Delta, F-sigma, Baire sets, Baire functions
		Baire sandwich theorem

SUNDAY - 04.07.2021		
12	July (5 - 10)	Baire measure, Borel sets
		Regularity of Baire measures
		Regular Borel Measure
		Integration of continuous functions with compact support
		Riesz - Markoff's theorem
		doubt class
SUNDAY - 11 .07.2021		
13	July (12)	test section 4

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Weekly Lesson Plan (Even Semes PG (4th Semester)

Name of the Paper:- Boundary Value Problem Class: M.sc. (F)

Name of the Teachers (Section wise): Mansi Bansal

WEEK	DATE	TOPICS
1	April (19-20) , (22-24)	Initial value problem
		Initial value problem
		Final value problem
		Final value problem
		Transverse oscillation of a homogenous elastic bar
HOIDAY - 21.04.2021 (Ram Navami)		
SUNDAY & Holiday (Mahavir Jayanti) 25.04.2021		
2	April (26 -30)	Dirac Delta function
		Greens function approach for the operator L
		Solution of Self adjoint I.V.P.
		Examples
	May (Ist)	Solution of self adjoint B.V.P.
		Properties of Greens function
SUNDAY - 02.05.2021		
3	May (03 - 08)	Examples
		Examples
		nth order self adjoint B.V.P.
		Modified Greens function
		Modified Greens function
		Modified Greens function
SUNDAY - 09.05.2021		
4	May (10-13) (15)	Problem discussion
		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
HOLIDAY - 14.05.2021 (Id-ul-Fitr / Parshuram Jayanti)		
SUNDAY - 16.05.2021		
5	May (17-22)	Interior and Exterior Dirichlet problem
		Interior and Exterior Neumann problem
		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

SUNDAY - 23.05.2021		
6	**May (24-29)**	greens function for the space bounded by grounded two parallel plates
		Helmholtz equation
		Helmholtz equation
		Problem discussion
		Revision
SUNDAY - 30.05.2021		
7	**May (31)**	Integral Transform
	June (1 - 5)	Fourier transform
		Fourier transform
		Laplace transform
		Properties of Greens function
		Convolution integral
SUNDAY - 06.06.2021		
8	**June (7-12)**	Application to volterra integral equations with convolution type kernal
		Hilbert transform
		Hilbert transform
		Examples
		Examples
		Two part boundary value problem
SUNDAY & Holiday (Maharana Pratap Jayanti) 13.06.2021		
9	**June (14 -19)**	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
		Examples
SUNDAY - 20.06.2021		
10	**June (21-23) (25 - 26)**	Problem discussion
		Integral equation perturbation methods
		Basic procedure
		Application to electrostatics
		Application to electrostatics
HOLIDAY - 24.06.2021 (Sant Kabir Jayanti)		
SUNDAY - 27.06.2021		
11	**June (28-30)**	Application to electrostatics
		Low-Reynolds-Number hydrodynamics
		Steady stokes flow
	July (1-3)	Boundary effects of stokes flow
		Longitudnal oscillations of solids in stokes flow
		Steady Rotary stokes flow

SUNDAY - 04.07.2021		
12	**July (5 - 10)**	Oseen flow
		Elasticity
		Boundary effects
		Torsion and Rotary oscillation problems in elasticity
		Cracks problem in elasticity
		Theory of Diffraction
SUNDAY - 11 .07.2021		
13	**July (12)**	Problem discussion

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Weekly Lesson Plan (Even Semester) PG (4th Semester)

Name of the Paper:-_SEISMOLOGY_____ Class: _MSC (F)___

Name of the Teachers (Section wise): ___MANISH KUMAR__

WEEK	DATE	TOPICS
1	April (19-20) , (22-24)	General form of prograssive wave
		Harmonic waves
		Plane waves
		The Wave equations
		Principle of superposition
HOIDAY - 21.04.2021 (Ram Navami)		
SUNDAY & Holiday (Mahavir Jayanti) 25.04.2021		
2	April (26 -30)	Special type of solutions
		Prograssive type solution of wave equation
		Stationary type solution of wave equations
		Continue…
	May (Ist)	Stationary type solution of plane polar equations
		Stationary type solution of spherical cordinates
SUNDAY - 02.05.2021		
3	May (03 - 08)	Equations of telegraphy
		Exponential form of harmonic
		D Almberts formula
		theorems
		theorems
SUNDAY - 09.05.2021		
4	May (10-13) (15)	Inhomogenous wave equation
		Dispersion group velocity
		Relation between phase velocity and group velocity
		theorems
		class discussion
HOLIDAY - 14.05.2021 (Id-ul-Fitr / Parshuram Jayanti)		
SUNDAY - 16.05.2021		
5	May (17-22)	Reduction of equation of motion to wave equation
		P AND S waves and their characterstics
		Polarisation of plane P AND S waves
		Snell law of reflection
		Continue…

SUNDAY - 23.05.2021		
6	**May (24-29)**	reflection of P waves at free surface
		reflection of SV waves at free surface
		reflection of SH waves at free surface
		Partition of reflected energy
		Reflection at criticals angles
SUNDAY - 30.05.2021		
7	**May (31)**	reflection of P, SV SH wave at interface
	June (1 - 5)	Continue…
		Continue…
		LIQUID LIQUID INTERFACE
		LIQUID SOLID INTERFACE
		Continue…
SUNDAY - 06.06.2021		
8	**June (7-12)**	SOLID SOLID INTERFACE
		Rayleign wve
		LOVE WAVE
		STONLEY WAVE
		class discussion
		Class test
SUNDAY & Holiday (Maharana Pratap Jayanti) 13.06.2021		
9	**June (14 -19)**	two dimensional lambs problem in isotropic solid
		Area source and Line source in unlimited solid
		normal force act on a semi infinite elastic solid
		tangential force acting on a semi infinite elastic solid
		Continue…
		Continue…
SUNDAY - 20.06.2021		
10	**June (21-23) (25 - 26)**	Three dimensional lambs problem in isotropic elastic solid
		Area source and Point source in unlinited elastic solid
		Area source and point source on semi infinite elastic solid
		Haskell matrix method for love waves
		class discussion
HOLIDAY - 24.06.2021 (Sant Kabir Jayanti)		
SUNDAY - 27.06.2021		
11	**June (28-30)**	Spherical waves
		Expansion of spherical wave into plane wave
		Sommerfields integrals
	July (1-3)	Kirchoff solution of wave equation
		Poissions formula
		Helmholtz formula

SUNDAY - 04.07.2021		
12	**July (5 - 10)**	Introduction to seismology
		Location of earth quach,Aftershocks,Foreshocks
		Earthquake magnitude
		Seismic moments
		Energy released by earthquake
		class discussion
SUNDAY - 11 .07.2021		
13	**July (12)**	Class test

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Weekly Lesson Plan (Even Semester) PG (4th Semester)

Name of the Paper:-__PARTIAL DIFFERENTIAL EQUATION_

Class: __MSC MATHS FINAL__

Name of the Teachers (Section wise): _SOURAV

WEEK	DATE	TOPICS
1	April (19-20) , (22-24)	basic definations
		defination of pde of kth order
		classification of pde
		reading based examples
		revision class
HOIDAY - 21.04.2021 (Ram Navami)		
SUNDAY & Holiday (Mahavir Jayanti) 25.04.2021		
2	April (26 -30)	study initial value problem
		transport equation and its solution
		laplace equation
		homogenous part
	May (Ist)	non homogenous part
		properties of transport
SUNDAY - 02.05.2021		
3	May (03 - 08)	radial equation
		fundamental solution
		harmonic function
		solution and property of harmionic function
		physical significance
		revision class
SUNDAY - 09.05.2021		
4	May (10-13) (15)	mean value formula
		poission equtaion and its soluton
		strong maxmimum principle
		uniqueness
		revision class
HOLIDAY - 14.05.2021 (Id-ul-Fitr / Parshuram Jayanti)		
SUNDAY - 16.05.2021		
5	May (17-22)	local estimate of harmonic function
		liouvalli,s theorem
		same
		harneck,s theorem
		revision class
		test of section 1

SUNDAY - 23.05.2021		
6	**May (24-29)**	green,s function
		derivation og green
		represtation formula
		symmetry of green function
		green function for half space
		revision class
SUNDAY - 30.05.2021		
7	**May (31)** **June (1 - 5)**	green function for ball
		energy method
		uniqueness
		drichlet,s princple
		heat equation
		physical interpretation
SUNDAY - 06.06.2021		
8	**June (7-12)**	fundamental solution of heat equation
		integral of solution
		solution of IVP
		duhamental princple
		mean value formula
		revision class
SUNDAY & Holiday (Maharana Pratap Jayanti) 13.06.2021		
9	**June (14 -19)**	strong maxmimum principle
		energy method
		text for section 2
		doubt class
		wave equation
		physical interpretation
SUNDAY - 20.06.2021		
10	**June (21-23)** **(25 - 26)**	solution of wave equation
		d,alemberts formula
		reflection method
		soluton by spherical mean
		euler-possion-derbox equation
HOLIDAY - 24.06.2021 (Sant Kabir Jayanti)		
SUNDAY - 27.06.2021		
11	**June (28-30)** **July (1-3)**	kirchhoff formula
		characteristics the pde
		hammilton jacobi equation
		legendre transformation
		hopf-lax formula
		text for section 3

SUNDAY - 04.07.2021		
12	**July (5 - 10)**	conservation law
		riemann problem
		solution by sepration of varibles
		fourier transformation
		laplace transformation
		cole-hop transformation
13	**July (12)**	complete revsion