

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

Weekly Lesson Plan (January 2020 - April 2020)

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

Class:- **M.Sc. P**

Name of the Teachers (Section wise): **AMIT**

WEEK	DATE	TOPICS
1	January (1 - 4)	Linear Second order equations
		Self Adjoint equation of second order
		Self Adjoint equation of second order
		Some Basic Facts of linear second order equations
SUNDAY - 05.01.2020		
2	January (6-11)	Superposition Principle
		Related theorems
		Ricatti's Equation
		Ricatti's Equation
		Pruffer transformation
		Pruffer transformation
SUNDAY - 12.01.2020		
3	January (13-18)	Problem Discussion
		Zeros of a Solution
		Related theorems
		Oscillatory and Non oscillatory Equations
		Oscillatory and Non oscillatory Equations
		Related theorems
SUNDAY - 19.01.2020		
4	January (20 -25)	Abel's Formula
		Strum Fundamental Comparison theorem
		Common Zeros of solutions
		Related examples
		Linear Dependence of Common Zero Solution
		Related examples
January - 26.01.2020		
5	January (27- 31) February (1)	Problem Discussion
		Test
		Strum Separation Theorem
		Related examples
		Strum Fundamental Comparison theorem
		Strum Fundamental Comparison theorem
SUNDAY - 02.02.2020		
6	February (3 -8)	Corollaries of Strum Fundamental Comparison theorem
		Related examples
		Elementary Linear Oscillations
		Related theorems
		Autonomous System :- The Phase Planes, paths
		Critical Points

SUNDAY - 09.02.2020		
7	February (10 -15)	Types of Critical Points
		Complete Description of Node
		Related examples
		Complete Description of Center
		Related examples
Various Applications of Path of Linear Systems		
SUNDAY - 16.02.2020		
8	February (17-22)	Related examples
		Problem Discussion
		Stability of Critical Points
		Related examples
		Some Basic theorems on Path of Linear Systems
		Some Basic theorems on Path of Linear Systems
SUNDAY - 23.02.2020		
9	February (24-29)	Various Applications of Path of Linear Systems
		Various Applications of Path of Linear Systems
		Problem Discussion
		Test
		Critical Points
		Some Basic theorems on Path of Non Linear Systems
SUNDAY - 01.03.2020		
10	March (02 -07)	Some more theorems
		Various Applications of Path of Non Linear Systems
		Liapunov function
		Related theorems
		Related theorems
		Liapunov Direct Method for stability of critical points of non linear systems
SUNDAY - 08.03.2020		
11	March (09 -14)	
		HOLI VACATIONS
SUNDAY - 15.03.2020		
12	March (16 -21)	Liapunov Direct Method for stability of critical points of non linear systems
		Related theorems
		Related theorems
		Limit Cycle
		Related theorems
		Existence and non existence of Limit Cycles
SUNDAY - 22.03.2020		
13	March (23-28)	Existence and non existence of Limit Cycles
		Benedixson's non existence criterion
		Half path or Semi orbit
		Related examples
		Limit Set
		Poincare Benedixson theorem

SUNDAY - 29.03.2020		
14	March (30 -31) April 1-4)	Poincare Benedixson theorem
		Index of a critical point
		Problem Discussion
		Test
		Second order Boundary value problems
		Linear problems and Periodic boundary conditions
SUNDAY - 05.04.2020		
15	April (06 -11)	Regular Linear BVP, Singular linear BVP, Non Linear BVP
		Related examples and theorems
		Related examples and theorems
		Strum-Liouville BVP
		Concept of Eigen Value and Eigen function
		Related examples
SUNDAY - 12.04.2020		
16	April (13-18)	Orthogonality of functions
		Related theorems
		Related theorems
		Orthogonality of eigen functions corresponding to distinct eigen values
		Related theorems
		Related theorems
SUNDAY - 19.04.2020		
17	April (20-25)	Green's Function
		Related theorems
		Related theorems
		Applications of Boundary Value Problems
		Applications of Boundary Value Problems
		Use of Implicit function theorem for Periodic solution
SUNDAY - 26.04.2020		
18	April (27-30)	Use of Fixed Point theorems for Periodic solution
		Related theorems and examples
		Problem Discussion
		Test

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Weekly Lesson Plan (January 2020 - April 2020)

Name of the Paper:- **REAL ANALYSIS -2**

Class:- **M.Sc. P**

Name of the Teachers (Section wise): **AMIT**

WEEK	DATE	TOPICS
1	January (1 - 4)	Lebesgue measurable function and their property ,
		Measurable sets and their properties, Lebesgue measure of sets of real numbers,
		Algebra of measurable sets, Borel sets and their measurability
		Test
SUNDAY - 05.01.2020		
2	January (6-11)	Characterization of measurable sets in terms of open and closed
		F and G sets
		Existence of a non-measurable set
		Problem discussion
		Test
		Examples
SUNDAY - 12.01.2020		
3	January (13-18)	Lebesgue measurable function and their property ,
		Characterisation functions
		Simple function
		Approximation of measurable function by sequence of simple functions
		Problem discussion
		Test
SUNDAY - 19.01.2020		
4	January (20 -25)	Examples
		Measurable functions as nearly continuous functions
		Borel measurability of a function
		Borel measurability of a function
		Problem discussion
		Test
January - 26.01.2020		
5	January (27- 31) February (1)	Almost uniform convergence
		Egoroff's theorem
		Egoroff's theorem
		Lusin's theorem
		Lusin's theorem
		Test
SUNDAY - 02.02.2020		
6	February (3 -8)	Convergence in measure
		F. Riesz theorem
		F. Riesz theorem
		The Lebesgue integral:
		Shortcomings of Riemann integral
		Lebesgue integral of a bounded function over a set of finite measure

SUNDAY - 09.02.2020		
7	February (10 -15)	Properties
		Lebesgue integral as a generalization of the Riemann integral
		Lebesgue integral as a generalization of the Riemann integral
		Bounded convergence theorem
		Test
SUNDAY - 16.02.2020		
8	February (17-22)	Examples
		Lebesgue theorem regarding points of discontinuities of Riemann integrable
		Functions
		Lebesgue theorem regarding points of discontinuities of Riemann integrable
		Test
SUNDAY - 23.02.2020		
9	February (24-29)	Integral of a non negative function
		Fatou's lemma
		Monotone convergence theorem
		Problem discussion
		Test
SUNDAY - 01.03.2020		
10	March (02 -07)	Integration of a Series
		The General Lebesgue Integral
		Lebesgue Convergence Theorem
		Problem discussion
		Test
SUNDAY - 08.03.2020		
11	March (09 -14)	HOLI VACATIONS
		HOLI VACATIONS
		HOLI VACATIONS
		HOLI VACATIONS
		HOLI VACATIONS
SUNDAY - 15.03.2020		
12	March (16 -21)	Differentiation and Integration
		Differentiation of Monotone functions
		Vitali's Covering lemma
		The four Dini Derivatives
		Test
SUNDAY - 22.03.2020		
13	March (23-28)	Lebesgue Differentiation Theorem
		Functions of bounded Variation
		Representation of B.V as difference of Monotone functions
		Problem discussion
		Test

SUNDAY - 29.03.2020		
14	March (30 -31) April 1-4)	Test
		Differentiation of an integral
		Differentiation of an integral
		Absolutely Continuous Functions
		Convex Function
		Jensen's Inequality
SUNDAY - 05.04.2020		
15	April (06 -11)	The l_p Space
		The l_p Space
		Minkowski Inequality
		Minkowski Inequality
		Holder Inequality
		Holder Inequality
SUNDAY - 12.04.2020		
16	April (13-18)	Problem discussion
		Test
		Completeness of l_p Space
		Completeness of l_p Space
		Bounded Linear Functional on l_p space
		Bounded Linear Functional on l_p space
SUNDAY - 19.04.2020		
17	April (20-25)	Riesz Representation theorem
		Riesz Representation theorem
		Riesz Representation theorem
		Problem discussion
		Problem discussion
		Test
SUNDAY - 26.04.2020		
18	April (27-30)	Revision
		Revision
		Revision
		Revision

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Weekly Lesson Plan (January 2020 - April 2020)

Name of the Paper:- Computer Programming Class:- M.Sc.(P)

Name of the Teachers (Section wise): Ms. Meenu Devi

WEEK	DATE	TOPICS
1	January (1 - 4)	Evolution of fortran
		Writing a program
		input statement
		Program examples
SUNDAY - 05.01.2020		
2	January (6-11)	Constants and scalar variables
		Declaring variable names
		Some simple programs
		Implicit Declaration
		Named constants
		Some program examples
SUNDAY - 12.01.2020		
3	January (13-18)	Arithmetic expressions
		Precedence of operations in expressions
		Examples of arithmetic expressions
		Defining variables
		Mixed mode expressions
		Examples of use of functions
SUNDAY - 19.01.2020		
4	January (20 -25)	Test
		List-Directed input statement
		Some program examples
		List-Directed output statement
		Some program examples
		Some program examples
January - 26.01.2020		
5	January (27- 31) February (1)	Relational operators
		The Block IF Construct
		Example Programs
		Some programs
		The Block DO Loop
		Program examples
SUNDAY - 02.02.2020		
6	February (3 -8)	Count Controlled DO Loop
		Rules to be followed in writing DO Loops
		Example Programs
		Logical constants,variables
		Logical expressions
		Precedence rules for logical operators

SUNDAY - 09.02.2020		
7	February (10 -15)	Example Programs
		The case statement
		Programs
		Test
		Function Subprograms
		Syntax rules for function subprograms
SUNDAY - 16.02.2020		
8	February (17-22)	Generic Functions
		Example Programs
		Subroutines
		Internal Procedures
		Example Programs
		Example Programs
SUNDAY - 23.02.2020		
9	February (24-29)	Arrays variables
		Use of multiple subscripts
		DO type notation
		Terminology Used for multidimensional arrays
		Use of arrays in DO Loops
		Example Programs
SUNDAY - 01.03.2020		
10	March (02 -07)	Test
		Format Description
		Multi-Record Formats
		Printing Character strings
		Generalized Input/Output statements
		Example Programs
SUNDAY - 08.03.2020		
11	March (09 -14)	HOLI VACATIONS
		HOLI VACATIONS
		HOLI VACATIONS
		HOLI VACATIONS
		HOLI VACATIONS
		HOLI VACATIONS
SUNDAY - 15.03.2020		
12	March (16 -21)	The Character Data Type
		Manipulating Strings
		Comparing Character Strings
		Example Programs
		Example Programs
		Procedures with Multi-Dimensional Arrays
SUNDAY - 22.03.2020		
13	March (23-28)	Example Programs
		Temporary Arrays in Procedures
		Functions as Dummy Arguments
		Example Programs
		Defining Derived Types
		Using Derived Types

SUNDAY - 29.03.2020		
14	March (30 -31) April 1-4)	Using Derived Types in Procedures
		Using Derived Types in Arrays
		Example Programs
		Example Programs
		Creating a Sequential File
		Example Programs
SUNDAY - 05.04.2020		
15	April (06 -11)	Searching a Sequential File
		Example Programs
		Updating a Sequential File
		Direct Access Files
		Example Programs
		Test
SUNDAY - 12.04.2020		
16	April (13-18)	The Pointer Data Type
		Creating a list Data Structure
		Example Programs
		Manipulating a linearly linked list
		Applications of binary trees
		Example Programs
SUNDAY - 19.04.2020		
17	April (20-25)	Abstract data Type with Modules
		Applications of a stack
		Example Programs
		Abstract data Type complex
		Example Programs
		Example Programs
SUNDAY - 26.04.2020		
18	April (27-30)	Kind Specification for reals
		Use of complex Quantities
		Example Programs
		Example Programs

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Weekly Lesson Plan (January 2020 - April 2020)

Name of the Paper:- **COMPLEX ANALYSIS**

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

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

WEEK	DATE	TOPICS
1	January (1 - 4)	Spaces of Analytic functions
		Completeness of analytic functions
		Hurwitz Theorem
		Hurwitz Theorem
SUNDAY - 05.01.2020		
2	January (6-11)	Montel's Theorem
		Montel's Theorem
		Montel's Theorem
		Problems Discussion
		Reimann Mappng Theorem
		Reimann Mappng Theorem
SUNDAY - 12.01.2020		
3	January (13-18)	Infinite Products
		Theorems Related to infinite Products
		Theorems Related to infinite Products
		Weierstrass Factorisation Theorem
		Weierstrass Factorisation Theorem
		Problems Discussion
SUNDAY - 19.01.2020		
4	January (20 -25)	Factorisation of Sine function
		Related Numericals
		Related Numericals
		Gamma function and its Properties
		Theorems on Properties of Gamma function
		Theorems on Properties of Gamma function
January - 26.01.2020		
5	January (27- 31) February (1)	Theorems on Properties of Gamma function
		Functional equation for Gamma function
		Functional equation for Gamma function
		Integral version of Gamma function
		Integral version of Gamma function
		Problems Discussion
SUNDAY - 02.02.2020		
6	February (3 -8)	Test
		Reimann -zeta function
		Reimann -zeta function
		Reimann functional equation
		Reimann functional equation

SUNDAY - 09.02.2020		
7	February (10 -15)	Runge's theorem
		Runge's theorem
		Mittag Leffler's theorem
		Mittag Leffler's theorem
		Problems Discussion
Analytic Continuation		
SUNDAY - 16.02.2020		
8	February (17-22)	Analytic Continuation
		Uniqueness of Direct Analytic continuation
		Uniqueness of Analytic continuation along a curve
		Uniqueness of Analytic continuation along a curve
		Power Series Method of analytic continuation
Power Series Method of analytic continuation		
SUNDAY - 23.02.2020		
9	February (24-29)	Schwarz Reflection Principle
		Schwarz Reflection Principle
		Problems Discussion
		Test
		Monodromy Theorem
Consequences of Monodromy theorem		
SUNDAY - 01.03.2020		
10	March (02 -07)	Consequences of Monodromy theorem
		Harmonic function as a Disc
		Poisson's Kernel
		Poisson's Kernel
		Harnack's Inequality
Harnack's Inequality		
SUNDAY - 08.03.2020		
11	March (09 -14)	HOLI VACATIONS
		HOLI VACATIONS
		HOLI VACATIONS
		HOLI VACATIONS
		HOLI VACATIONS
HOLI VACATIONS		
SUNDAY - 15.03.2020		
12	March (16 -21)	Harnack's theorem
		Harnack's theorem
		Canonical Theorem
		Canonical Theorem
		Jenson's Formula
Jenson's Formula		
SUNDAY - 22.03.2020		
13	March (23-28)	Poisson Jenson's formula
		Poisson Jenson's formula
		Hadamard's Three Circle theorem
		Problems Discussion
		Dirichlet Problem for a Unit Disc
Dirichlet Problem for a region		

SUNDAY - 29.03.2020		
14	March (30 -31) April 1-4)	Green's functions
		Problems Discussion
		Test
		Order of an entire function
		Exponent of Convergence
		Related theorems
SUNDAY - 05.04.2020		
15	April (06 -11)	Related theorems
		Borel Theorem
		Borel Theorem
		Hadamard factorisation theorem
		Hadamard factorisation theorem
		The Range of an analytic function
SUNDAY - 12.04.2020		
16	April (13-18)	The Range of an analytic function
		Bloch's theorem
		Bloch's theorem
		Little Picard theorem
		Little Picard theorem
		Problems Discussion
SUNDAY - 19.04.2020		
17	April (20-25)	Schotkky's theorem
		Schotkky's theorem
		Montel-Carathedory theorem
		Montel-Carathedory theorem
		Great Picard theorem
		Great Picard theorem
SUNDAY - 26.04.2020		
18	April (27-30)	Related Numericals
		Related Numericals
		Problems Discussion
		Test

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Weekly Lesson Plan (January 2020 - April 2020)

Name of the Paper:- **Advanced Abstract Algebra-II** Class:-**M.Sc.(P)**

Name of the Teacher(Section wise):- **Ms.Srishti Jindal**

WEEK	DATE	TOPICS
1	January (1 - 4)	Commutators and higher commutators
		Commutators identities and commutator subgroups
		Derived group , Lemma of P.Hall.
		Theorems on derived group
SUNDAY - 05.01.2020		
2	January (6-11)	Central series of a group
		Nilpotent groups
		Theorems related to nilpotent groups
		Theorems related to nilpotent groups
		Finite nilpotent groups
		Upper central series of a group
SUNDAY - 12.01.2020		
3	January (13-18)	Lower central series of a group
		Theorems related to upper and lower central series
		Theorems related to upper and lower central series
		Theorems related to upper and lower central series
		Problem discussion
		Test
SUNDAY - 19.01.2020		
4	January (20 -25)	Subgroups of finitely generated nilpotent groups
		Subgroups of finitely generated nilpotent groups
		Theorems
		Theorems
		Sylow -subgroups of nilpotent groups
		Theorems
January - 26.01.2020		
5	January (27- 31) February (1)	Problem discussion
		Test
		Similar linear transformations
		Invariant subspaces
		Reduction to triangular form
		Related theorems
SUNDAY - 02.02.2020		
6	February (3 -8)	Nilpotent transformations, index of nilpotency
		Related theorems
		Related theorems
		Uniqueness of the invariants of a nilpotent transformation
		Problem discussion
		Test

SUNDAY - 09.02.2020		
7	February (10 -15)	Primary decomposition theorem
		Jordan blocks, Jordan canonical forms
		Cyclic module
		Related theorems
		Companion matrix
SUNDAY - 16.02.2020		
8	February (17-22)	Linear transformation - rational canonical form
		Elementary divisors
		Related theorems
		Uniqueness of the elementary divisor
		Problem discussion
SUNDAY - 23.02.2020		
9	February (24-29)	Modules, submodules and quotient modules
		Generated modules, cyclic modules
		Related theorems
		Idempotents
		Homomorphism of R-modules
SUNDAY - 01.03.2020		
10	March (02 -07)	Fundamental theorem of homomorphism of R-modules
		Direct sum of modules
		Related theorems
		Endomorphism rings of left R-module
		Simple modules, semi-simple modules
SUNDAY - 08.03.2020		
11	March (09 -14)	
		HOLI VACATIONS
SUNDAY - 15.03.2020		
12	March (16 -21)	Finitely generated free module
		Free modules:-Rank, submodules
		Related theorems
		Problem discussion
		Test
SUNDAY - 22.03.2020		
13	March (23-28)	Endomorphism ring
		Related theorems
		Finitely generated modules
		Theorems
		Descending change conditions
SUNDAY - 29.03.2020		
		Theorems

14	March (30 -31) April 1-4)	Notherian modules and rings
		Theorems
		Theorems
		Artinian modules and rings
		Theorems
SUNDAY - 05.04.2020		
15	April (06 -11)	Theorems
		Nil and nilpotet ideals
		Theorems
		Hilbert basis theorem
		Theorems
		Problem discussion
SUNDAY - 12.04.2020		
16	April (13-18)	Test
		Boolean rings
		Structure theorem
		Theorems
		Theorems
		Problem discussion
SUNDAY - 19.04.2020		
17	April (20-25)	Wedeerburn -Artin theorem
		Wedeerburn -Artin theorem
		Wedeerburn -Artin theorem
		Consequences of wedeerburn artin theorem
		Consequences of wedeerburn artin theorem
		Consequences of wedeerburn artin theorem
SUNDAY - 26.04.2020		
18	April (27-30)	Theorems
		Theoems
		Problem discussion
		Test