Paper: PG (MT) 01: Group A

Writer

Prof. Pranay Kumar Chaudhuri

Editor

Prof. Mithil Ranjan Gupta

Paper: PG (MT) 01: Group B

Writer

Prof. Pranay Kumar Chaudhuri

Editor

Prof. Manjusha Majumdar

Notification

All rights reserved. No part of this Book may be reproduced in any form without permission in writing from Netaji Subhas Open University.



PG (MT)—01 Abstract Algebra, Linear Algebra

Group

A

Abstract Algebra

Unit 1	0	Preliminaries and Basic Concepts	7-17
Unit 2	0	Permutation Groups and Quotient Groups	18-31
Unit 3		Morphisms of Groups	32-51
Unit 4	0	Characteristic of a Ring, Ideals of a Ring and Homomorphisms of Rings	52-65
Unit 5	0	Euclidean Domain, Polynomial Rings	66-76
Unit 6		Extensions of Fields, Splitting Fields	77-87
~			

Group B

Linear Algebra

Unit 1		Vector Spaces			91-112
Unit 2		Inner Product Spaces			113-127
Unit 3	0	Linear Transformations			128-152
Unit 4	0	Reduction of Matrices to Diagonal/Normal Form			153-184
Unit 5	0	Quadratic Forms, Canonical Classification of Quadrics	Forms,	24 ()	185-204

Subject : Mathematics Post Graduate

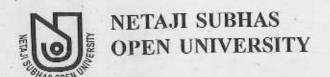
Paper: PG (MT) 02: Groups: A & B

Group A

	Writer	Editor
Units: 1-3 Units: 4-11	Prof. Sobhakar Ganguly Prof. Manabendranath Mukherjee	Prof. Abhoy Pada Baisnab Prof. Abhoy Pada Baisnab
	Group B	
Units: 1-8	Dr. Pulak Sahoo	Dr. Sanjib Kumar Datta

Notification

All rights reserved. No part of this book may be reproduced in any form without permission in writing from Netaji Subhas Open University.



PG (MT) - 02 Real Analysis & Metric Spaces

Complex Analysis

Group-A

Real Analysis & Metric Spaces

Unit	1	u	Open sets of reals, Continuous Functions Funtions of Bounded Variation	• 9-33
Unit	2	0	Lebesgue Measure of Sets, Algebra of Measurable Sets and Measurable Functions, Convergence in Measure	34-58
Unit	3	0	Lebesgue Integral and Summable Functions	59-83
Unit	4	u	Riemann Sticeltjas Integral, Fourier Series	84-112
Unit	5		Metric Space, Opensets, Closed Sets and Algebra, Closure, Interior and Boundary of Sets	113-139
Unit	6	۵	Complete Metric Spaces, Examples, Castors Theorem, Baire Theorem and Equivalent Metrics	140-161
Unit	7	٥	Continuous Functions over Metric Spaces, Uniform Continuity, Contraction Theorem, Werstrom approximation Theorem	162-186
Unit	8	۵	Compactness and Connectedness in Metric Spaces and Applications	187-205
		0	Acknowledgement	206

Group-B Complex Analysis

Unit	1	0	Complex Numbers	209-224
Unit	2	o	Functions, Limits and Continuity	225-238
Unit	3	a	Analytic Functions	239-256
Unit	4	a	Complex Integration	257-284
Unit	5	a	Infinite Series : Taylor's and Laurent's Series	285-311
Unit	6	a	Classification of Singularities	312-326
Unit	7	u	Calculus of Residues and Contour Integration	327-354
Unit	. 8	o	Bilinear Transformation	355-368

Paper: PG (MT) 03: Groups A & B

Writer

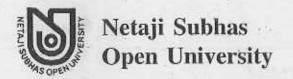
Prof. Dulal Ch. Sanyal

Editor

Prof. Rabindranath Jana

Notification

All rights reserved. No part of this Book may be reproduced in any form without permission in writing from Netaji Subhas Open University.



PG (MT)—03
Ordinary Differential
Equations and
Special Functions,
Partial Differential Equations

Group

Ordinary Differential

Equations and Special Functions

Unit	1		Existence and Nature of Solutions	7-24
Unit	2	u	General Theory of Linear Differential Equations	25-42
Unit	3	٥	System of Linear Differential Equations	43-73
Unit	4	۵	Second-Order Linear Differential Equations	74-87
Unit	5	0	Green's Function	88-99
Unit	6	u	Plane Autonomous Systems	100-112
Unit	7	a	Special Functions	113-173
7	Ī		References	174

Group

B

Partial Differential Equations

Unit 1	Fundamental Concepts	177–204
Unit 2	Partial Differential Equations of the First Order	205-243
Unit 3	Second Order Partial Differential Equations	244-277
Unit 4	Elliptic Differential Equations	278-327
Unit 5	Parabolic Differential Equations	328-362
Unit 6	Hyperbolic Differential Equations	363-398
Unit 7	Green's Function	399-419
	References	420

Paper: PG (MT) 04: Group A

Writer

Editor

Prof. Debasis Sarkar

Prof. Subhas Ch. Bose

Revised by Prof. Madhumangal Pal

Paper: PG (MT) 04: Group B (Revised Syllabus)

Writer

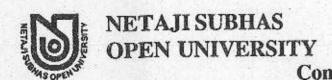
Editor

Prof. Madhumangal Pal

Prof. Kajal De

Notification

All rights reserved. No part of this Book may be reproduced in any form without permission in writing from Netaji Subhas Open University.



PG (MT)-04
TY Numerical Analysis,
Computer Programming and
its application to
Numerical Analysis

Group A

Numerical Analysis

Unit 1		Introduction	7-16
Unit 2		Solving System of Linear Algebric Equations in n unknowns	17-46
Unit 3	0	Eigen Values and Eigen Vectors of $n \times n$ Numerical Matrix	47-57
Unit 4	a	Solutions of Non-linear Equations	58-87
Unit 5	0	Polynomial Interpolation	88-102
Unit 6	0	Approximation	103-114
Unit 7		Numerical Integration	115-132
Unit 8	0	Numerical Solution of Ordinary Differential Equations : Initial Value Problems	133-159
Unit 9		Two-Point Boundary Value Problems of Ordinary Differential Equations	160-166
Unit 10	a	Elements of Finite Difference Method of Numerical Solution of Partial Differential Equations	167-183

Group B

Computer Programming and its application to Numerical Analysis

Unit 1	a	Algorithms and Flowcharts	185-201
Unit 2	0	Programming with C	202-380
Unit 3		Problems on Numerical Analysis	381-414
Unit 4	0	Data Structures	415-444

Paper: PG (MT) 05: Groups A & B

Group A

Writer

Prof. Bijan Kr. Bagchi

Editor

Prof. Mithil Ranjan Gupta

Group B

Writer

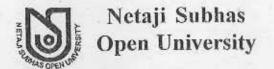
Prof. Satya Sankar De

Editor

Prof. Pranay Kumar Chaudhuri

Notification

All rights reserved. No part of this Book may be reproduced in any form without permission in writing from Netaji Subhas Open University.



PG (MT) — 05 Principles of Mechanics Elements of Continuum Mechanics and Special Theory of Relativity

Group

A

Principles of Mechanics

Unit I	O	Preliminaries	7-16
Unit II	٥	Constraints, Generalized Coordinates and D'Alembert's Principle	17-25
Unit III		Lagrangian Mechanics	26-48
Unit IV		Rotating Frames	49-63
Unit V	۵	Hamiltonian and Poisson Bracket	64-80
Unit VI		Action Principles	81-94
Unit VII	u	Symmetries and Constants of Motion	95-106
Unit VIII	U	The Theory of Cononical Transformations	107-122

Group B **Elements of Continuum Mechanics** and Special Theory of Relativity

Unit 1		Special Theory of Relativity		123-131
Unit 2	О	Simultaneity and Time Sequence		132-143
Unit 3	0	Elastic Solid Media	1 2	144-161
Unit 4	o	Analysis of Strain		162-175
Unit 5		Analysis of Stress		176-198
Unit 6	ם	Generalized Hooke's Law		199-210
Unit 7	0	Fluid Media		211-228
Unit 8	a	Equations of Motion of Fluid		229-251
Unit 9	u	Cartesian Tensors		252-260

P.G.

(Mathematics)

SYLLABUS

General Topology VI A (Marks: 50) PGMT-II

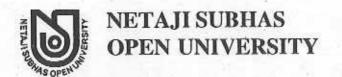
Topological spaces, Examples, Base for a Topology, Sub-subbase, Neighbourhood system of a point, Neighbourhood base, Limit point of a set, Closed sets, Closure of a set, Kuratowski closure operator; Interior and boundary of a set, Sub-space Topology, First and Second Countable spaces. Continuous function over a Topological space. Homeomorphism; Nets, Filters, Their convergence, Product space, Projection function, Open and Closed function, Quotient spaces.

Separation axioms T₀, T₁, T₂, T₃, T₄ in Topological spaces, Product of T₂-spaces, Regular spaces, Normal spaces, Completely regular spaces, Tychonoff spaces, Urysohns Lemma in Normal spaces, Tietze extension Theorem, Embedding in cube, Embedding Lemma, Urysohn's metrization Lemma.

Open cover, Sub-cover, Compactness, Countable open cover, Lindelöff space, Compact sets, Finite Intersection property, Tychonoff Theorem on product of compact spaces, Continuous image of a compact spaces, Locally compact spaces, One point compactification.

Connected spaces, Separated sets, Disconnection of a space, Union of connected sets, Closure of a connected set, Connected sets of reals, Continuous image of a connected space, Topological product of connected spaces, components, Totally disconnected spaces, Locally connected spaces.

Uniformity in a set, Base, Sub-base of a Uniformity, Uniform space, Uniform Topology, T₂-property of a Uniformity, Interior and closure of a set in terms of uniformity, Uniformly continuous function, Product Uniformity.



PG (MT)-VII
Differential Equations
and Integral
Transformation,
Integral Equations

Group

A

Differential Equations and Integral Transformation

Chapter 1		Integral Transformation and Differential Equation	ns 7-9
Chapter 2		Fourier Transformation with Application to Differential Equations	10-100
Chapter 3	0	Laplace Transformation with Application to	
Chanter 4	п	Differential Equations Hankel Transformation	101-169
Chapter 4		Hanker Transformation	170-104

Group B

Integral Equations

100			
Unit 1		Preliminary Concepts	185-210
Unit 2	u	Method of Successive Approximations	211-225
Unit 3		Fredholm Theory	226-253
Unit 4	0	Hilbert-Schmidt Kernel	254-270

Subject : Mathematics Post Graduate

Paper: PG (MT) 08: Group A

Writer

Prof. Manjusha Majumdar

Editor

Prof. M. C. Chaki

Revised by Prof. Uday Chand De

Paper: PG (MT) 08: Group B

Writer

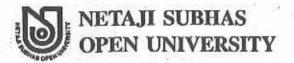
Prof. B. C. Chakraborty

Editor

Prof. Malay Sen

Notification

All rights reserved. No part of this study material may be reproduced in any form without permission in writing from Netaji Subhas Open, University.



PG (MT) - 08
Differential Geometry
(With the Use of
Tensor Calculus),
Graph Theory

Group

Different	tial Geometry	
Unit 1 Q	Tensors	7–20
Unit 2 🗆	Riemannian Space	21-33
Unit 3 🗆	Curves in Space	34-43
Unit 4 🔾	Surfaces in Space	44-72
Group B		
Graph T	heory	
Unit 1 🗆	Graphs and Digraphs	75–89
Unit 2 🗆	Subgraphs, Isomorphism of Graphs, Walks, Paths, Cycles	90–102
Unit 3 🗆	Connected Graphs, Complement of a Graph, Bipartite Graphs	103–116
Unit 4 🔾	Eulerian and Hamiltonian Graphs	117-126
Unit 5 🗆	Tree	127-147
Unit 6 🗆	Planar Graph	148-156
Unit 7 🗆	Matrix Representation of Graphs	157-164