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2022 - 2023 ODD SEMESTER

S.No.	CLASS	SUB.CODE	SUBJECT TITLE	HOURS
1.	II M.Sc Maths	PBRIMTCC11	Complex Analysis	6
2.	III CS 'C'	U5RICSTDC1	Quantitative Aptitude-I	3
2.	I IT 'B'	UIR2ITCC1	Programming in C	6
3.	I M.Sc Maths	PIR2MACC1	Abstract Algebra	6

18

Hour D.O	1	2	3	4	5
D ₁	I M.Sc	I IT 'B'			II M.Sc
D ₂		II M.Sc		I M.Sc	I M.Sc
D ₃		I M.Sc	II M.Sc	I IT 'B'	
D ₄	II M.Sc	I M.Sc	I IT 'B'		
D ₅	I M.Sc		I IT 'B'	I M.Sc	
D ₆		I IT 'B'		II M.Sc	I IT 'B'

UNIT I: Complex functions

Introduction to the Concept of Analytical function - Elementary theory of power Series - The Exponential and Trigonometric functions.

UNIT II: Fundamental Theorems and Cauchy's Integral Formula

Line Integrals - Rectifiable Arc's - Line Integrals as functions of Arcs - Cauchy's theorem for a rectangle - Cauchy's theorem in a Disk - The Index of a point with respect to a closed curve - The Integral formula - Higher Derivatives.

UNIT III: Local Properties of Analytic Functions

Removable singularities, Taylor's Theorem - Zeros and Poles - Weierstrass Theorem - The local Mapping - The Maximum Principle - Schwarz Lemma.

UNIT IV: General Form of Cauchy's Theorem and the Calculus of Residues

Chains and cycles - Simple Connectivity - Locally Exact Differentials - Multiply Connected Regions - The Residue Theorems - The Argument Principle - Evaluation of Definite Integrals.

Date: 20-10-2022

Topic: Theorem

Day Order: D5

Hour: 1

Let Ω^+ be the part in the upper half plane of a symmetric region Ω , and let σ be the part of the real axis in Ω . Suppose that $v(x)$ is continuous in $\Omega^+ \cup \sigma$, harmonic in Ω^+ , and zero on σ . Then v has a harmonic extension to Ω which satisfies the symmetry relation $v(\bar{z}) = -v(z)$.

[Signature] 20/10/22

Date: 26-10-2022

Topic: Revision

Day Order: D6

Hour: 4

Poisson formula for Harmonic Functions



Date: 27-10-2022

Topic: Revision

Day Order: D1

Hour: 5

Mean value Property for Harmonic Functions

[Signature] 27/10/22

Dr. O. Uma MAHESWARI

ASSISTANT PROFESSOR

DEPT. OF MATHEMATICS

NOTES OF LESSON - ODD SEMESTER

JUNE 2022 - NOV-2022

Class	S. Code	Title	Hours.
I BSC Maths	U3R1M7CC4	Number Theory	5
III BCA B	USR1CAZDC1	Quantitative Aptitude-2	2.
I m. sc	PIR2MADEE1	Elements of Stochastic Processes	6.
I BCA 'A'		Algebra and Calculus	5
			<u>18</u>

	1	2	3	4	5
D1	I m				
D2		I m	II BCA B	III CS B	
D3	II m			II CS B	
D4	I m	I m			
D5		I m	II BCA B		
D6	I m		III CS B		

Number Theory - U3R1MTC4

Unit I: Preliminaries & Divisibility Theory.

Introduction - Well Ordering Principle -
Mathematical Induction - Binomial Coefficient -
Pascal's Triangle - Basis representation Theorem -
Divisibility - Division Algorithm - Greatest common
divisor - Euclidean Algorithm - Least common multiple -
Fibonacci Sequence - Lamé's Theorem - Kronecker's
theorem - The Linear Diophantine equation.

Unit II - Primes and Their Distribution & Theory of Congruence.

Introduction - Prime number - Fundamental thm of
Arithmetic - Sieve of Eratosthenes - The Goldbach
Conjecture - Congruence - Basic properties of congruences.
Residue theorem - Tests of divisibility - Linear congruence
Solvability Condition of a system of Linear Congruence

Unit III - Fermat's Theorem;

Introduction - Fermat's factorization method -
Fermat's Little Theorem - Wilson's Theorem - Euler's
factorization method.

Unit IV - Perfect Number

Introduction - Perfect numbers - Mersenne primes
- Fermat number - Pythagorean triples - Other
Diophantine equation - Fermat's Last theorem.

Unit V - Sum of Squares of Integers.

Introduction - Sum of two squares - Sum of
more than two squares - Waring's problem.

Text Book:

[1] "Number Theory", Hari Krishan, Krishna's publication
12th edition 2017.

Unit I: Chap 1: Sec 1.1 to 1.6 & Chap 2, 2.1 to 2.10.

Unit II: Chap 3, Sec 3.1 to 3.5 &

Unit III: Chap 5, Sec 5.1 to 5.5

Unit IV: Chap 9, Sec 9.1 to 9.7

Unit V: Chap 10 Sec 10.1 to 10.6

Date: 09-11-22

Topic: Poisson cluster

D.O: D6

Poisson Cluster Process:

$$p(s) = \sum_{k=1}^{\infty} p_k s^k$$

Pure Birth process or Yule-Furry process:

$$p_k(h) = \Pr \{ N(h) = k \mid N(0) = h \}$$

$$= \begin{cases} \lambda h + o(h) & , k=1 \\ o(h) & , k \geq 2 \\ 1 - \lambda h + o(h) & , k=0 \end{cases}$$

Date: 10-11-22

Topic: Theorem

D.O: D1

Theorem:-

The pgf of a non-homo process $\{N(t), t \geq 0\}$ is given by.

$$Q(s, t) = \exp \{ m(t) (s-1) \} \quad \text{where}$$

$$m(t) = \int_0^t \lambda(n) dn \quad \text{is the expectation of } N(t)$$

Date: 11-11-22

Topic: Unit: IV

D.O: D2

Renewal Processes and theory:

Theorem: Relation Between $F(s)$ and $P(s)$.

Defn:-

* Periodic Renewal event & period

* Aperiodic renewal event.

* Mean recurrence time.



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JUNE-2022 - NOV' 2022 [ODD SEM]

CLASS	SUB. CODE	TITLE OF THE PAPER	HOURS
I M-SC	PIR2MACCH	MECHANICS	6
II M-SC	P3RIMTEC3	ADVANCED GRAPH THEORY	6
III I.T	USRIET IDCI	QUANTITATIVE APTITUDE-I	2
III B.COM D	USRICM IDCI	QUANTITATIVE APTITUDE-I	2
III BBA AT		Quantitative Aptitude-I	2
II B.Sc	VIR2ESACI USRI BA IDCI	Algebra and Calculus	<u>18</u>

	1	2	3	4	5
D1	II M-SC	IM-SC		III B.com 'D'	II M-SC
D2	IM-SC		II M-SC		III B.com 'D'
D3	II M-SC	III BBA A		IM-SC	
D4		II M-SC	III IT		IM-SC
D5		III BBA A	IM-SC	II M-SC	II M-SC

Unit I: Matchings

Matchings - Definitions - Examples - Matchings and Coverings in Bipartite Graphs - Perfect Matchings Chap 5, sec: 5.1 - 5.3 [1]

Unit II: Edge colourings, Independent sets and Cliques

Edge Chromatic Number - Vizing's Theorem - Independent sets - Ramsey's Theorem Chap 6, sec 6.1, 6.2, Chap 7, sec 7.1, 7.2 [1]

Unit III: Vertex colourings

Chromatic Number - Brook's Theorem - Hajó's Conjecture - Chromatic polynomials. Chap 8, sec 8.1 - 8.4 [1]

Unit IV: Planar Graph

Plane and planar Graphs - Dual Graphs - Euler's Formulae - Bridges - Kuratowski's Theorem - The Five-Colour Theorem - The Four-Colour Conjecture. Chap 9, sec 9.1 - 9.6 [1]

Unit V: Domination in Graphs

Dominating sets in Graphs - Sets of Representatives - Applications of Domination numbers. Chap 1, sec 1.1 - 1.13 [2]

Text Books.

1. Graph Theory with Applications - J.A. Bondy - U.S.R. Murthy - The Macmillan press Ltd.
2. Fundamentals of Domination in Graphs, T.W. Haynes, S. Hedetniemi and P.J. Slater, 1998, CRC press.

Date: 11.11.22

Ar: I

D.O: D2

Topic: Relation

Relation between Lagrange and Poisson bracket.

$$\sum_{i=1}^{2n} [u_i, u_j] [u_i, u_j] = \delta_{ij}$$

$\{u_i, u_j\}$ is Lagrange Bracket
 $[u_i, u_j]$ is Poisson Bracket

Syllabus completed.

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NAME :- N. DEEPAK
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JUNE 2022 to NOV 2022 [ODD SEMESTER]

S.NO	CLASS	SUB CODE	TITLE OF THE PAPER	HOURS
1	II Maths	USRIMTCCH	NUMERICAL METHODS	5
2	III BCAA "A"	USRICAIIDC-I	QUANTITATIVE APTITUDE I	2
3	III BCAA "C"	USRICAIIDC-I	QUANTITATIVE APTITUDE I	2
4	I.B.Sc Physics	U2R2MTAC2	ALLIED MATHEMATICS - II	3
5	I.B.Sc Chemistry	UIRIMTACI	ALLIED MATHEMATICS I	6

Total: 18

Hour	I	II	III	IV	V
D0					
D1	I BCAA		B.Sc (III) Maths		
D2		III BCAA "C"		I Phy / chem	I phy / chem
D3	III BCAA A	III B.Sc Chem	III B.Sc Maths		
D4		III BCAA "C"	III B.Sc Maths	I phy / chem	
D5	III B.Sc Chem			I phy / chem	I phy / chem
D6	III B.Sc Maths	III B.Sc Maths		I phy / chem	I phy / chem

NUMERICAL METHODS

III B.SC MATHS Sub code: USRINTC001

UNIT-I: ALGEBRAIC AND TRANSCENDENTAL EQUATIONS

Introduction - Bisection Method -
Iteration Method - Method of False
Position - Newton Raphson Method

UNIT-II: INTERPOLATION

Introduction - Finite Differences -
Newton's method of Interpolation - Lagr-
ange's interpolation formula - Newton's
general interpolation formula - Method
of successive approximation

UNIT-III: NUMERICAL SOLUTION OF ODE NUMERICAL DIFFERENTIATION AND INTEGRATION

Introduction - Numerical differentia-
tion - Errors in Numerical differentiation
Cubic spline Method - Numerical
Integration using Trapezoidal and
Simpson's $\frac{1}{3}$ rd, $\frac{3}{8}$ th Rule.

DATE: 20/10/2022

TOPIC: Integrals

D.O: 25

HOOR: IV & V

* Evaluate $\int_0^{\pi/2} \log(1 + \tan x) dx$

sol: $\pi/8 \log 2$

* Evaluate $\int_0^{\pi/2} \frac{\sin^4 x}{\sin^4 x + \cos^4 x} dx$

sol: $I = \pi/4$

* Evaluate $\int_0^{\pi/2} \log \sin x dx$

$I = \log [1/2] \pi/2 //$

DATE: 26/10/2022

TOPIC: Double Integrals

D.O: 26

HOOR: IV & V

* Evaluate $\int_0^2 \int_0^x (x^2 + y^2) dy dx$

sol: 26/105

* Evaluate $\iint xy dx dy$ taken over positive quadrant of circle $x^2 + y^2 = a^2$

sol: $a^4/8$

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TOPIC:

HOOR:



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K. PUSHPAVALLI M.Sc., M.Phil.

ASSISTANT PROFESSOR.

DEPARTMENT OF MATHEMATICS

S.No	CLASS	SUBJECT CODE	TITLE OF THE PAPER	HOURS
1	III-MATHS	U5R1MTCC9	MODERN ALGEBRA	5
2	III - CS A'	U5R1CSIDA1	QUANTITATIVE APTITUDE - I	3
3	III - B.Com 'C'	U5R1CMIDA1	QUANTITATIVE APTITUDE - I	2
4	III - B.Com 'B'	U5R1CMIDA1	QUANTITATIVE APTITUDE - I	2
5	I-B.Sc CS	U1R2CS	Algebra And Calculus	5
6	III B.Com A'	U5R1CMIDA1	Quantitative Aptitude - I	2

	1	2	3	4	5
D ₁	III _m		III _{CS} A'		
D ₂		III _m		I _{CS}	
D ₃	III _m				III _{B.Com 'C'}
D ₄			III _m		III _{CS} A'
D ₅	III _{CS} A'				I _{CS}
D ₆	I _{CS}	III _m		III _{B.Com 'C'}	III _{B.Com 'B'}

Modern Algebra

USRIMTCC9

Unit - I : Groups

Introduction - Definition and Examples - Elementary properties of group - Equivalent definitions of a group - permutation Groups - Subgroups - Cyclic groups - Order of an element.

Unit - II : Normal Subgroups and Homomorphism.

Cosets and Lagrange's Theorem - Normal subgroups and Quotient groups - Isomorphism - Homomorphism.

Unit - III : Rings

Definition and Examples - Elementary properties of rings - isomorphism - Types of rings - characteristics of a ring - subrings - Ideals - Quotient rings - Maximal and prime ideals - Homomorphism of rings.

Unit - IV - Field

Field of quotients of an integral domain - ordered integral domain - Unique factorization domain (U.F.D)

Unit - V - polynomial Rings

Euclidean domain - Every Principle ideal Domain (P.I.D) is a U.F.D - polynomial Rings - polynomial Ring over U.F.D - polynomials over $\mathbb{Q}$

Date: 20/10/22 Topic: Revision

D.O. Dr

Hr: I

20/10/22

Unit - I

&

Unit - II

Date: 27/10/22 Topic: Revision

D.O. Dr

Hr: III

27/10/22

Unit - II

Unit - III & IV

27/10/22

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D.O.!

Topic:

Hr:



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DEPARTMENT OF MATHEMATICS

June-2022 to NOV-2022 [ODD SEM]

S.NO	Class	Sub. code	Title of The Paper	Hour
1.	III B.Sc Maths	UBRIMTSBES	Quantitative Mathematics for Competitive Examination. ^{05/12/2022}	02
2.	II B.Sc Maths	UBRIMTCC5	Sequence and Series. ^{29/11/2022}	06
	III BBA	UBRIBA7DET	Quantitative Aptitude	08
3.	I B.Sc IT	UIR2ITACI	Essential of Mathematics. ^{28/11/2022}	07
	I B.Sc	UIR2ITACI	Essential of Mathematics	03.
4.	I B.Sc "CHMY"	U2R2MTAC2	Allied Mathematics - II.	08

18 HRS

D.O Hour	I	II	III	IV	V
D1		II m			
D2	II m				III m
D3	II m	III BBA			
D4		II m	III m		
D5	II m	III BBA			
D6			II m		

SEQUENCES AND SERIES [U3RIMTC]

Unit - I Sequences

Set, Sequences - Limit of a Sequences -
Upper and Lower bound Dedekind's theorem -
Upper and Lower bound of an aggregate - Bounded
Sequences - The upper and lower limit of a Sequences
Cauchy's general Principle of Convergence - Monotonic
Sequences - a monotonic Sequences always tend to
a limit - Finite or Infinite.

Unit - II Test for Convergency of Series.

Convergence of Infinite Series, Geometric
Series - Some general theorems concerning infinite
Series - Series of Positive terms - Comparison
Tests - Convergent of the given Series - Series
whose - Cauchy's Condensation Test - D'Alembert's
Ratio Test.

Unit - III Cauchy's Test

Cauchy's root Test - Raabe's Test -
Absolutely Convergent Series - Absolutely
Convergent Series and Conditionally Convergent Series.
An absolutely Convergent Series is Convergent -
Series whose terms are alternately Positive and
negative.

Unit - IV Binomial, Exponential and Logarithmic Series.

Binomial Theorem for a Rational Index -
Some Important Particular cases of Binomial
expansion - Sign of term in Binomial

Date: 27.10.2022 Topic:

D.O: D1

Hour: II

Test for Binomial Series

29/10/22



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27/10/22

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Date:

Topic:

D.O:

Hour:



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Date:

Topic:

D.O:

Hour:

Mr. K. ARUN

ASSISTANT PROFESSOR

DEPT. OF MATHEMATICS

NOTES OF LESSON - ODD SEM.

[JUNE 2022 - NOV 2022]

S. No	SUB. CODE.	TITLE OF THE PAPER	HOURS
1	USRIMTMBE1	Operations Research	5
2	USRITURAC4	Operations Research	5
3		Value Education	2
4	DIR2STAC1	Mathematical Statistics - I	6

	1	2	3	4	5
D1	III M			II IT	
D2		III M			III IT
D3		II M		II IT	II M
D4	III M				
D5	II IT				II M
D6	II IT	II M			

Unit-I Linear Programming Problem. (Chapter I, II, IV)

Introduction to OR - An overview of OR - Mathematical Formulation of LPP - Graphical Solution - Simplex Method for $<, =, >$.

Unit-II Duality in Linear Programming (Chapter V)

Introduction - General Primal-Dual Pair - Formulating a Dual Problem - Primal-Dual pair in Matrix form - Duality & Simplex method - Dual Simplex method.

Unit-III Transportation Problem. (Chapter X)

Introduction - LP Formulation of TP - Solution of TP - Finding an initial basic feasible Solution - Test for Optimality - MODI Method - Stepping Stone Method - Unbalanced Transportation Problems.

Unit-IV Assignment Problem: (Chapter XII)

Introduction - Mathematical Formulation of Problem - Solution Methods of Assignment Problem - Unbalanced Assignment Problem - Travelling Salesman Problem.

Unit-V Network (Chapter XXV)

Introduction - Basic Components - Logical Sequencing - Rules of Network Construction - Concurrent Activities - Critical Path Analysis - Probability Consideration in PERT - Distinction between PERT & CPM.

Text Book:-

"Operations Research"

Kanti Swar, Gupta P.K & Manmohan
Publication.

Date: 26/10/22
Day: Mon - D6

Hours: 2

Sequencing Problem:-

* Total elapse time

* Idle time

* No passing Rule.

* n jobs through two machines

* Related Problems.

Date: 27/10/22

Hours: 2

Day: Tue - D7

* n jobs through three machines

* Related Problems.

[Signature]
27/10/22

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Date: 27/10/22
Day: Tue

D. KALAISELVI

M.Sc., M.Phil., M.Ed., SET, Ph.D.

ASST. PROF. OF MATHEMATICS

JUNE 2022 - NOV 2022 [odd sem]

CLASS	SUB. CODE	TITLE	HOURS
II M.Sc., MATHEMATICS	PBRMTCCID	FUNCTIONAL ANALYSIS	6
I M.Sc MATHEMATICS	PIR2MACC2	REAL ANALYSIS - I	6
-B'			

	1	2	3	4	5
D1		II msc B'	I M.Sc	ITT B'	III msc B'
D2		I M.Sc		II M.Sc	ITT B'
D3	ITT B'	II msc		II M.Sc	ITT B'
D4	I M.Sc	III BGP B'		II M.Sc	ITT B'
D5	I M.Sc	II M.Sc			ITT B'
D6	III msc	ITT B'	I M.Sc	I M.Sc	

1. II M-SC MATHS-
Functional Analysis - 6
2. III BBA 'B'
Quantitative
Aptitude-I - 2

Functional Analysis P3R1MTCC10

Unit I: Banach Spaces:

The definition and some examples - Continuous linear transformations - The Hahn-Banach theorem - The natural imbedding of N in N^{**} - The open mapping theorem - The conjugate of an operator.

Unit II: Hilbert Spaces:

The definition and some simple properties - orthogonal complements - orthonormal sets - the conjugate space H^* - The adjoint of an operator - self-adjoint operators - normal and unitary operators - projections.

Unit III: Finite Dimensional Spectral Theory.

Matrices - Determinants and the spectrum of an operator - The Spectral Theorem - A survey of the situation.

Unit IV: General Preliminaries on Banach Algebras

The definition and some examples - Regular and singular elements - Topological divisors of zero - the spectrum - the formula for the spectral radius - the radical and semi-simplicity

Unit V: The Fixed point Theorems and Boolean Algebras (Appendices).

Fixed point theorem - Brouwer's fixed point theorem, Schauder's fixed point theorem - Picard's theorem - Boolean Algebra - Boolean rings - Stone's theorem.

Text Book:

[1] "Introduction to topology and Modern Analysis" by G.F. Simmons - McGraw Hill Education (India) Edition 2004.

Unit I: Chapter 9 Fully (page No: 211-242)

Unit II: Chapter 10 Fully (page No: 243-277)

Unit III: Chapter 11 Fully (page No: 278-297)

Unit IV: Chapter 12 Fully (page No: 301-317)

Unit V: Appendices 1 and 3 (page No: 337-340 & 341-352)

Date: 28/9/2022

D.O. 28/9/22

Topic: Problems

* Find the determinant of each matrix.

(a) $\begin{vmatrix} 1 & 2 & 3 \\ 4 & -2 & 3 \\ 0 & 5 & -1 \end{vmatrix}$

(b) $\begin{vmatrix} 4 & -1 & -2 \\ 0 & 2 & -3 \\ 5 & 2 & 1 \end{vmatrix}$

Date: 30/9/2022

D.O. 30/9/22

Topic: Inverse

Find the inverse of the matrix.

(i) $\begin{pmatrix} 3 & 5 \\ 2 & 3 \end{pmatrix}$

(ii) $\begin{pmatrix} 1 & 2 & 3 \\ 4 & -2 & 3 \\ 0 & 5 & -1 \end{pmatrix}$

Dr. S. PRIYADARSHINI, M.Sc., M.Phil.,
HEAD

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Topic:



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Dr. S. Priyadarshini

Head

Department of Mathematics

J. J. College of Arts & Science (A)

1. $\hat{II}$ B.Sc Mathematics - Real Analysis - 05
U5R1MTCC10

2. $\hat{I}$ B.Sc Mathematics - Calculus I - 107
U1R2NACCL
15

	1	2	3	4	5
D ₁	I _m			I _m	I _m
D ₂		I _m	I _m		
D ₃	I _m			I _m	I _m
D ₄	I _m			I _m	I _m
D ₅	I _m	I _m			I _m
D ₆	I _m	I _m			I _m

UNIT I - Real Number System

Introduction to Real Number System - Field axioms - Order relation in $\mathbb{R}$ - Absolute value of a real number and its properties - Supremum and Infimum of a set - Order completeness property - Countable and uncountable sets [Chapter 1 of [1]]

UNIT II - Continuous Functions

Definition of continuous functions - Limit of a function - Algebra of limits - Continuity of a function - Types of discontinuities - Algebra of continuous functions - Intermediate value Theorem - Elementary properties of continuous functions - Uniformity continuity of a function. [Chapter 5 of [1] except sec 5]

UNIT III - Derivative of function

Differentiability of a function - Derivability and continuity - Algebra of derivatives - Inverse function theorem - Darboux's Theorem on derivatives.

[Chapter 6 of [1] except sec 6, 7]

UNIT IV - Mean Value Theorems

Rolle's Theorem - Mean Value Theorems on derivative - Lagrange's mean value theorem - Cauchy's mean value theorem - Taylor's Theorem with remainder - Power series expansion.

[Chapter 8 of [1], except sec 7, 8]

UNIT V - Riemann Integrability

Riemann Integration - Definition - Darboux's Theorem - Necessary and Sufficient condition for

Date: 26/10/2022

Day: D6

Hour: II

Topic: Riemann theory

1. Fundamental Theorem of Integral Calculus.
2. Mean value theorem of Integral Calculus
 - (i) First mean value theorem
 - (ii) Second mean value theorem

Date: 27/10/2022

Day: D1

Hour: III

Topic: Riemann theory

1. Abel's lemma

Revision on important questions from

Unit 1 to 5 (10 marks)

28/10/2022

Head & Assistant Professor,
PG & Research Department of Mathematics,
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Topic:

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Dr. O. Uma Maheswari
Assistant Professor
Dept. of Mathematics

Even Semester - Dec 2022 - May 2023.

S.No	Sub. Code	Title of the Paper	Class	Hours.
1.		Topology	I M.Sc Maths	6.
2.		Operations Research	I BCA 'A'	2
3		Numerical methods & Statistics	I BCA 'B'	2
4.		Theory of Games and Decision Making.	II BSc Maths	3
5		Quantitative Aptitude-2	III BSc IT	1
6.		Project	II M.Sc	1
				<u>18</u>

	1	2	3	4	5
D1		I BCA 'C'		I M.Sc	
D2		I BCA 'C'	II M.Sc	I BCA 'A'	
D3	II M		I BCA 'C'		I M.Sc
D4			I M.Sc		III IT
D5	I BCA 'C'	I M.Sc			I M.Sc
D6	II M.		I BCA 'A'	I M.Sc	

I M.Sc., - Topology -

Unit I: Topological Spaces.

Types of Topological spaces and Examples
Basics for a topology - The order Topology
The product topology on $X \times Y$. The subspace
topology - Closed sets and limits points.

Unit II: Continuous Functions:

Continuous functions - The Product
Topology - The metric topology - Sequence
Lemma - Uniform limit theorem -
Connected Spaces - connected Subspaces
of the real line - components and
Local connectedness.

UNIT-III:

Compactness and complete
Metric Spaces.

Compact Spaces - compact subspaces
of the real line - Uniform continuity
theorem - limit point compactness -
Complete metric spaces - compactness in
metric spaces.

UNIT-IV:

Countability and Separation Axioms

First and Second countable spaces -
Lindelöf and Separable spaces -
Countability axioms - The Separation
axioms - Normal spaces - The Urysohn's
Lemma.

Date: 16.03.23

Topic: Theorem.

D.O: D5

Theorem:

* A Subspace of a completely regular Space is completely regular.

* A product of completely regular Space is completely regular.

Date: 20.3.23

Topic: Theorem.

D.O: D1

Uryshon Metrization Theorem:

Statement:

Every regular Space X with a countable basis is metrizable. (or)

Every regular and countable T_2 Space is metrizable.

Date: 21.03.23

Topic: Theorem.

D.O: D2

Tietze Extension Theorem:

Let X be a normal space. Let A be a closed Subspace then any continuous map A into the closed interval $[a, b]$ of $\mathbb{R}$ may be extended to continuous map of all of X in $[a, b]$.

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EVEN SEMESTER DEC 2022 - May 2023

S.No	CLASS	SUB CODE	TITLE OF THE PAPER	HOURS
1	II B.Sc MATHS	U4RINTCC6	VECTOR CALCULUS AND FOURIER SERIES	5
2	III B.Sc MATHS	U6RIMTSBE3	FOUNDATION MATHEMATICS FOR COMPETITIVE EXAMINATION	2
3	III BCA "C"	U6RICAIID2	QUANTITATIVE APTITUDE-II	2
4	I B.Sc Phy/che.	U2R2MAAC3	ALLED MATHEMATICS-III	5
5	II BBA	U4RIBAAC6	OPERATIONS RESEARCH	4

Total :- 18

D.O	9.15 10.15	I	II	III	IV	V
D1	II B.Sc MATHS	II BBA	III BCA "C"		I B.Sc Phy / che.	
D2	II B.Sc MATHS	I B.Sc Phy/che	II BBA			
D3		III BCA "C"	I B.Sc Phy/che			
D4	II B.Sc MATHS	II BBA		II B.Sc Maths		
D5	II B.Sc MATHS		I B.Sc Phy/che	I B.Sc Phy/che	I B.Sc Phy/che	
D6	II B.Sc MATHS		III B.Sc Maths	II BBA		

VECTOR CALCULUS AND FOURIER SERIES.

CODE : U4RMTC6

UNIT-I: VECTOR DIFFERENTIATION & INTEGRATION

→ Vectors function - Limit and continuity of vector function - Derivative of vector function with respect to a scalar - Curves in space - Velocity and acceleration - Integration of vector functions.

UNIT-II: GRADIENT, DIVERGENCE & CURL

Partial derivatives of vectors - Vector differential operators ∇ - Gradient of scalar field - Definition - Level surfaces - Directional derivative of scalar point function - Tangent plane & normal to a level surface - Divergence of vector point function - Laplacian operator ∇^2 - Important vector identities

UNIT-III: GREEN'S, GAUSS & STOKES'S THEOREM

Line integrals - Surface integrals - Volume Integrals - Green's Theorem in the plane - Divergence Theorem in the plane - Divergence Theorem of Gauss - Green's Theorem - Stokes's Theorem (No proof) - Related Problems

DATE

: 20/3/2023

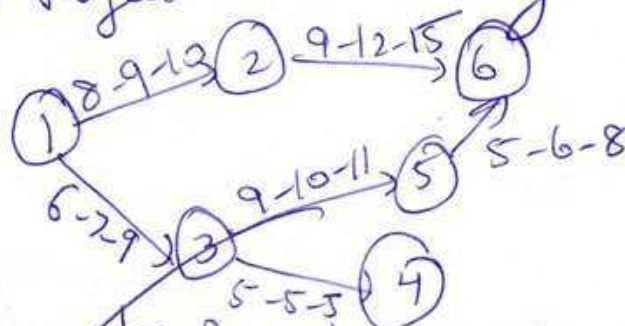
TOPIC : PERT

D-O

: D1

HOOD : I

* For the following PERT determine
 i) critical path ii) probability of completing the project in 23 days.



sol: critical path = 1 → 3 → 5 → 6
 Probability = 0.0409

DATE

: 21/3/2023

TOPIC : PERT

D-O

: D2

HOOD : III

* Revision of all important 2 mark questions of university Exam.

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Department of Maths
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NOV' 2022 - APR' 2023
EVEN SEMESTER

SNO.	Class	Sub. code	Title of the paper	HOURS
1.	II MISC MATHS	P4RMT EC4P	Advanced MATLAB	6
2.	II MISC MATHS	P2R2MA CC5	Linear Algebra	6
3.	IB-SC IT	U2R2M ZTAC2	Numerical Methods and Statistics	5
4.	III BBA BBA	UBR1BA/CA IPC2	Quantitative Aptitude-II	2+2

	1	2	3	4	5
D1			III BBA'C	I ITB'	I MISC
D2	II MISC MATLAB		I MISC	I ITB	
D3	I ITB		III BBA'C	I MISC	II MISC
D4	I MISC	III BBA'B'	I ITB'	II MISC	
D5	II MISC MATLAB			I MISC	I ITB'
D6			III BBA'B'		I MISC

II M.Sc Mathematics

ADVANCED MATLAB

List of practicals.

1. MATLAB Program involving Matrix Multiplication
Sec: 3.7-3.10.3 [1], pages: 48-68
2. MATLAB program to find Eigen values & Eigen Vectors
Sec: 8.1 [2], Page: 371-373
3. System of linear equations using Matrix Method
Sec: 2.3 [2], Page: 92
4. Solve Polynomial Equations
Sec: 4.1-4.11 [1], page: 81-89
5. To draw two-dimensional plots
Sec: 6.1-6.2 [1], page: 120-129
6. To draw multiple plots
Sec: 6.3-6.6, page: 129-131
7. To draw style options, legend command and sub-plots
Sec: 6.4-6.6, page: 132-135.
8. To draw Three Dimensional plots
Sec: 6.8.1-6.8.8, page: 146-151
9. To solve Constrained Optimization
Sec: 7.3.2. [2], Pg: 352-355
10. To solve Graphical LPP
Sec: 7.3.3 [2], pg: 355-357
11. To solve Laplace Transform and Inverse Laplace Transform
Sec: 11.2 [1] Pg: 265-266

Date: 21/3/23

Hr:

D.O: D₂

Topic: Simpson's $\frac{1}{3}$, $\frac{3}{8}$ Rules

* Using Simpson's $\frac{1}{3}$, $\frac{3}{8}$ Rule.

Evaluate $\int_{-1}^1 \frac{dx}{1+x^2}$ taking 8 intervals

Ans: 1.5708, 1.5512.

Evaluate $\int_{0.5}^{0.7} e^{-x} \sqrt{x} dx$ taking 5 ordinates by Simpson's Rule.

Ans: 0.0848, 0.0796.

Date: 23/3/23

Hr:

D.O: D₃

Topic: Trapezoidal Rules.

* Deviated the range into 10 equal parts find the value of $\int_0^{\pi/2} \sin x dx$ by using Trapezoidal Rule

Ans: $\int_0^{\pi/2} \sin x dx = 0.9979$.

0.9979

Date:

Hr:

D.O:

Topic:

Other:

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DEC 2022 to APR 2023

Even Semester - 2022

S.No	Class	Sup. code	Title of the paper	Hour
1.	III B.Sc Maths	U6R1MTCC12P	Numerical Methods with MATLAB	04+1
2.	II B.Sc Maths	U4R1MTCC7	Differential Eqn's and Laplace Transforms	05
3.	IMCA	P2RICACCT7	Discrete Mathematics	05
4.	I B.Sc 'CS'	U2R2CSORACE	operations Research	05
5.	III BCA 'A'	U6RICSIDCA	Quantitative Aptitude-II	01

	I	II	III	IV	V
D1	II m		I mca 'A'	I CS 'C'	
D2	II m	I mca 'A'	III BCA 'A'		I CS 'C'
D3	II m		II mca 'A'	I CS 'C'	
D4	← MATLAB →		I CS 'C'		
D5	II m		I mca 'A'	I CS 'C'	II m
D6	← MATLAB →				I mca 'A'

Numerical Methods with MATLAB

List of Practicals :-

1. Linear Interpolation.
2. Linear regression.
3. Curve fitting.
4. Trapezoidal rule of Integration.
5. Simpson's $\frac{1}{3}$ rule of Integration.
6. Newton-Raphson method for Solving Equations
7. Gauss elimination method of solving Simultaneous equations.
8. Gauss-Seidel method of solving differential equations.
9. R-K Fourth order method of solving differential Equations
10. Lagrange's method of Interpolation.

Text Book :-

1. "Applied Numerical methods using MATLAB",
By Won young yang, Wenwu Cao, Tae-Sang chung,
John Morris, A John wiley and sons Inc.

D.O: D2

Hocor: I

* Solve $\frac{d^2y}{dt^2} + t \frac{dy}{dt} - 5y = 5$, given $y=0, \frac{dy}{dt}=0$ when $t=0$.

* Ans: $y(t) = -1 - \frac{e^{-5t}}{6} + \frac{7e^t}{6}$

* Solve $\frac{d^2y}{dt^2} + 2 \frac{dy}{dt} + 5y = 4e^{-t}$, given that

* Ans: $y(t) = e^{-t} [1 - \cos 2t]$

Date:

Topic:

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Hocor:



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Date:

Topic:

D.O:

Hocor:

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Unit-I vector spaces

Vector space - linear independence and Basis - Rank of the matrix - Change of Basis

Unit-II Linear transformation

Linear transformations - Algebra of linear transformations - Matrix of a linear transformation - Dual spaces - Linear transformations on Direct sums.

Unit III: Determinants

Permutations - Determinants - cofactor expansion - characteristic values

Unit IV: Single linear operator

Polynomial Rings - Modules and minimal polynomials - Triangularization - canonical forms - Semi-simple linear operators.

Unit V: Inner product spaces

Inner products - Adjoint operator - Hermitian form.

Text Book:

[1] "Linear Algebra" Surjeetsingh, Vikas Publishing house Pvt Ltd, new edition 2015.

Unit I: Chapter 2

Unit II: Chapter 3

Unit III: Chapter 4

Unit IV: Chapter 5

Unit V: Chapter 6.

Date: 17.3.2023

Hour: 1

D.O: D6

Topic: Theorems

① Define T -complemented.

② Thm:- Let T be a linear operator on a finite dimensional vector space V_F & W be a T -invariant subspace of V . Then, W is T -complemented iff for any $f(x) \in F[x]$ & $\alpha \in V$, $f(T)\alpha \in W$ implies $f(T)\alpha = f(T)\alpha_1$, for some $\alpha_1 \in W$.

Date: 20.3.2023

Hour: 1

D.O: D1

Topic: Semi-simple linear operators

① Define semi-simple matrix.

② Thm:- Let T be a linear operator on a finite dimensional vector space V_F . Then T is semi-simple iff the minimal poly of T is a product of finitely many distinct primes in $F[x]$.

Date: 21.3.2023

Hour: 1

D.O: D2

Topic: Theorem

Thm:- ① Let T be a linear operator on V_F , & $\alpha \in V$. Then, the dimension of the T -cyclic subspace $F[T]\alpha$ equals the degree of the T -annihilator polynomial of α .

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 Even Sem: Dec 2022 - May 2023

S.No	Class	Sub. Code	Title of the Paper	Hours
1	I B.Sc Maths		Mathematical Statistics II	4
2	I MBA		Operations Research	5
3	I BCA		Operations Research	5
4	I Msc		Programming in C++	4
5				

	1	2	3	4	5
D1		I MBA	I BCA	I M	K M
D2	I M	I MBA	K M	P BCA	
D3	P BCA		K M	I M	
D4			K M	I BCA	I M
D5	I MBA		K M		
D6			K M	I MBA	I M

Unit-I Linear Programming Problem

Introduction - Origin & Development of OR - Nature & Features of OR - Scientific method of OR - Modeling in OR - Advantages & Disadvantages of Models - Operation Research and Decision Making - Applications in OR - Linear Programming Problem - Mathematical formulation of the problem - Graphical Solution.

Unit-II Chapter 1

Unit-II Decision Analysis

Introduction - Decision-making Problems - Decision-making process - Decision making environment - Decision - Under uncertainty - Decision making Under risk - Decision - Tree Analysis - Decision Making with Utilities.

Chapter-16

Unit-III Games & Strategies

Introduction - Two Person Zero-Sum Games - Some Basic terms - The maximum - Minimax Principle - Games without Saddle points - Mixed Strategies - Graphical Solution $2 \times n$ & $m \times 2$ Games - Dominance Property - Arithmetic Mean for $n \times n$ Games - General Solution of $m \times n$ Rectangular Games. Chapter-17

Unit-IV Inventory Control [Chapter 19]

Introduction - Types of Inventories - Reasons for Carrying Inventories - The Inventory Decision - Objectives of Scientific Inventory Control - Cost Associated with Inventories - Factor affecting Inventory Control - An Inventory Control problem - The Concept of EOQ - Deterministic Inventory Problems with

Date 14/3/23

Hours

Day class D3

- * Simulation of Queueing Systems.
- * Relating Problems.
- * Simulation of Investment and Budgeting.
- * Relating Problems.

Date 16/3/23

Hours

Day class D5

- * Simulation of Jobs Sequencing.
- * Relating problems.
- * Simulation of Networks.
- * Relating problems.

Date 17/3/23

Hours

Day class D6

- * Advantages & Disadvantages of Simulation.
- * Simulation of Network related problems.

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ASSISTANT PROFESSOR

DEPARTMENT OF MATHEMATICS

S.No	Class	Subject Code	Title of the paper	Hr
1	I-B.Sc Maths	U2R2	Calculus-II	
2	III - CS 'A&B'	U6R1CSIDC2	Quantitative Aptitude-II	
3	III - BBA 'A'	U6R1BAIDC2	Quantitative Aptitude-II	
4	I - B.Sc CS-'A'	U2R2CSNMAC3	Numerical Methods and Statistics.	

	I	II	III	IV	V
D ₁					
D ₂					
D ₃					
D ₄					
D ₅					
D ₆					

CALCULUS - II

UNIT-I - Integration.

Integration of $f'(x)/f(x)$, $f'(x)f(x)$, $[(px+q)/\sqrt{ax^2+bx+c}]$, $[\sqrt{x-a}/(b-x)]$, $[\sqrt{x-a}(b-x)]$, $1/\sqrt{(x-a)(b-x)}$, $1/(a\cos x + b\sin x + c)$, $1/(a\cos^2 x + b\sin^2 x + c)$.

Integration by parts - Bernoulli's Formula - Definite Integral - properties of definite integral.

UNIT-II - Evaluation of Reduction Formulae.

Reduction formulae for i) $\int x^n e^{ax} dx$ ii) $\int x^n \cos ax dx$ iii) $\int \sin^n x$ (or $\cos^n x$) dx iv) $\int \tan^n x dx$ v) $\int \sin^m x \cos^n x dx$.

UNIT-III - Multiple integrals.

Definition of double integrals - Evaluation of double and integrals - change of order of integration - applications of multiple integrals - triple integrals - Simple problems only.

UNIT-IV - change of Variables in double and triple Variables.

Change of Variables - Jacobians - change of Variables in double and triple Variables - Transformation from Cartesian to polar co-ordinates and Spherical co-ordinates.

Unit - I, II, III

Revision

Date: 23/3/23

Topic: Revision.

D.O: D₃

Hr: V

Unit - IV, V

Revision

Date:

Topic:

D.O:

Hr:

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SL NO.	CLASS	SUBJECT CODE	TITLE OF THE PAPER	HGR
1	I MATHS	U2RISTAC2P	R - Programming (LAB)	3
2	I MBA	PIRIBACC6	Statistics for Managers	5
3	I MBA (KIM)		Statistics for Management	5
4	II Bsc (MB)	U3RIMBAC4	BioStatistics	6
5.	II Msc (MB)	PBRIMBSECH	BIOStatistics	2
				21

	1	2	3	4	5	1.30	
D ₁			II Bsc MB	II Msc MB			
D ₂					II Bsc MB		
D ₃							
D ₄			II Bsc MB			II Bsc MB	
D ₅				II Bsc MB			
D ₆				II Msc MB		II Bsc MB	

BIO STATISTICS

UNIT - I Introduction to Biostatistics

Biostatistics: Definition - Developments - Applications - Role of statistics - characteristics - Limitations - Importance

UNIT - II Collection and Presentation of data

Collection of data: Data Collection - Primary data - Secondary data, Classification.

Classification and tabulation: Types of classification - Tabulation of data - Parts of a table - Types of tabulation.

Graphical representation: rules, Limitations difference between diagram and graphs - histogram - frequency polygon - frequency curve Ogive Curve

Diagrammatic representation: Rules, Limitations - Bar diagrams (Simple, Multiple, Components, Proportional - Pie diagram.

UNIT - III Measures of Central Tendency

Measures of Central Tendency: Introduction - characteristic - Arithmetic Mean - Median - Mode - Geometric Mean, Harmonic Mean (definition, Merits and demerits, Problems) based on raw, discrete and Continuous data) (Direct method

Topic: Classification

* Classification

* Types of classification

- 1) Chronological classification
- 2) Geographical classification
- 3) Qualitative classification
- 4) Quantitative classification

Date: 23/3/23

Day order: D2 Hour

Topic: Tabulation

Tabulation

- * Definition of Tabulation
- * Table.
- * Advantages of Tabulation

Preparing a Table

1. Table Number
2. Title of the table
3. Captions or column headings
4. Stubs or row designation
5. Body of the table.

6. Footnotes

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Sources



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J. J. COLLEGE OF ARTS AND SCIENCE (A)

PUDUKKOTTAI

2022 - 2023

(EVEN SEMESTER)

S.NO	CLASS	SUBJECT CODE	SUBJECT	HOURS
1	I BCA "A"	U2R2MCAAC3	NUMERICAL METHODS AND STATISTICS	5
2	I BCA "B"	U2R2MCAAC3	NUMERICAL METHODS AND STATISTICS	5
3	I BCA "C"	U2R2MCAAC2	OPERATIONS RESEARCH	5
4	III BCA "B"	U6R1CAIX2	QUANTITATIVE APTITUDE - II	2
TOTAL				17

Theory - 17

Lab - 3

Total - 20

HOUR DAY ORDER → ↓	1	2	3	4	5
D1	I BCA 'C'		I BCA 'B'	I BCA 'A'	III BCA 'B'
D2	I BCA 'C'		I BCA 'B'		
D3	I BCA 'C'	I BCA 'B'		I BCA 'A'	
D4	I BCA 'C'	I BCA 'B' LAB	I BCA 'A'	I BCA 'B'	
D5	II BCA 'C' LAB	I BCA 'C'	III BCA 'B'	I BCA 'A'	
D6		III BCA 'C' LAB	I BCA 'B'		I BCA 'A'

UNIT-I - SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS

Bisection Method, Method of false position, Iteration Method, Newton Raphson Method - Problems only.

UNIT-II - SOLUTION OF SIMULTANEOUS LINEAR EQUATIONS

Gauss Elimination Method, Gauss Jacobi Method, Gauss Jordan Method, Gauss Seidel Method (No Proof needed)

UNIT-III - NUMERICAL INTERPOLATION

Lagrange's Interpolation Formula - Divided differences - Newton's Formula - Newton's Forward and Backward Interpolation Formulae (No Proof needed)

UNIT-IV - NUMERICAL DIFFERENTIATION AND INTEGRATION

Newton's Forward and Backward Differentiation Formula - Trapezoidal, Simpson's $\frac{1}{3}$ rd and $\frac{3}{8}$ th Rule. (Problems only)

UNIT-V - STATISTICS

Mean, Median, Mode, Standard deviation, Correlation and Regression - Simple numerical Problems only.

Text books:

1. Introductory methods of numerical analysis, S.S. Sastry, Prentical Hall India, 1994.
2. Statistical methods, G.P. Gupta, S. Chand & Company, New Delhi.
3. Numerical Methods, N. Subramaniam, scm publishers, Erode.

CLASS	DATE	DAY ORDER	Hour
I BCA 'A'	17-03-23	D6	5
I BCA 'B'	23-03-23	D3	2
TOPIC: Revision			

Revision - Formulas test

UNIT-I - Solution of Algebraic equations

UNIT-II - Solution of Simultaneous equations

UNIT-III - Numerical Interpolation

CLASS	DATE	DAY ORDER	Hour
I BCA 'A'	20-03-23	D1	4
TOPIC: Revision			

Revision - Formulas test

UNIT-IV - Numerical Differentiation & Integration

UNIT-V - Statistics

CLASS	DATE	DAY ORDER	Hour
I BCA 'A'	23-03-23	D3	4
TOPIC: Revision			

Revision - All units

D. Uma Maheswari

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J.J. Parasuraman
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Dr. T. KALAI SELVI,
Assistant Professor,
Department of Mathematics,

Even Semester - Dec 2022 - March 2023.

1.	Im.sc Maths	Real Analysis - II		
2.	I Bsc maths	Probability and Statistics		
3.	I BCA 'B'	Operations Research		
4.	III BCA 'A'	Quantitative Aptitude - II	1	

	1	2	3	4	5
D1			I M.sc	I BCA 'B'	IM + II M.sc
D2		IM	IM + II M.sc	I BCA 'B'	I M.sc
D3		I M.sc	IM + II M.sc	I BCA 'B'	
D3		I M.sc	IM + II M.sc	I BCA 'B'	
D4			III BCA 'A'		IM.sc
D5	I M.sc	I BCA 'B'			
D1		A	P	IM	

UNIT I: Functions of bounded Variation

Introduction - properties of monotonic functions - Functions of bounded Variation - Total Variation - Additive property of total Variation - Total Variation of $[a, x]$ as a function of x - function of bounded Variation expressed as the difference of two increasing functions. Riemann-Stieltjes Integral: Definition and Existence - Properties - Integration and Differentiation - Integration of vector valued functions - Rectifiable curves.

UNIT II: Functions of several Variables.

Linear transformation - Differentiation - The inverse function theorem - The implicit function theorem.

UNIT III: Riemann-Stieltjes integral.

Definition and existence of the Integral - Properties of the Integral - Integration and Differentiation - Integration of vector valued functions.

Unit IV: Sequences and Series of Functions.

Discussion of main problem - Uniform Convergence - Uniform Convergence and Continuity. uniform Convergence and Integrations - uniform Convergence and Differentiation - Equi Continuous families of functions - The Stone-Weierstrass theorem.

Date: 18.01.23

D.O: D1

Topic: Problems

* In the random placement of three balls in three cells, describe the possible outcomes of the experiment. Let X_i denote the number of balls in cell i ; $i=1,2,3$ and N_i the number of cells occupied. Obtain the joint distribution of: (a) (X, N) and (b) (X_1, X_2) .

Date:

D.O:

Topic:

D. Uma

Dr. D. UMA MAHESWARI,
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Assistant Professor,
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Date:

D.O:

Topic:

[Nov 2022 - April 2023]
Even Semester

Mr. A. Anandaraj
Assistant Professor
Department of Mathematics
JJC, Polkt.

S.No	CLASS	SUB. CODE	PAPERS	HOUR
1.	I MCA 'B' sec	P2R2CACCI1	Discrete Mathematics	5
2.	III B.SC MATHS	U6R1MTMBE2	Graph Theory	5
3.	I B.SC CS 'B'	U2R2MTCSD RAC2	Operations Research	5
4.	I B.SC IT 'A'	U2R2MTJT AC2	Numerical Methods + Statistics	4
5.	II M.SC MATHS	PHR1MTECHP	MATLAB	5

	I	II	III	IV	V
D ₁		I MCA 'B'	I CS 'B'	I IT 'A'	II M.SC
D ₂		MATLAB II M.SC	I MCA 'B'	I CS 'B'	II MATHS
D ₃	I MCA 'B'		I IT 'A'	II M	III M
D ₄			I CS 'B'	II M	I IT 'A'
D ₅		II M.SC MATLAB	I CS 'B'	I MCA 'B'	
D ₆			III M	I MCA 'B'	I IT 'A'

24

Class: I MCA

Sub. Code: P2R2CACC11

Discrete Mathematics

Unit - I Sets, Relations and Functions

Basic Concepts of Set Theory - Some operations on set, Partial ordering relations. Representation of discrete structure - Hasse diagram, functions, Inverse functions, Compositions of functions, Recursive functions.

Chap II Sec 2.1 - 2.6.1 [1]

Unit - II : Mathematical Logic

Statement and notations - Connectives - well formed, Logic operators. Truth tables - Tautology - Normal forms, Theory of inference and deduction, mathematical Calculus, Predicate Calculus predicates and quantifiers.

Chap I Sec 1.1 - 1.4 except 1.4.4 [1]

Unit - III Groups and Subgroups

Algebraic structure, Definition & Examples - General Properties - Group Axioms - Permutation groups, Subgroups, Cosets, Lagrange's Theorem - Normal Subgroups, Semi groups, free Semi groups and monoids - Defn and examples - Homomorphism of Semi groups and monoids.

Chap III Sec 3.1 - 3.2 and 3.5 [1]

Date: 21-03-23

D/o: D2

Topic: Chromatic
part

- * A maximal Independent
- * Finding minimal Dominating Sets
- * observation
- * Dominating Sets.

Other

Date:

D/o:

Topic:

Other

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2022 - 2023

EVEN SEMESTER

S.No.	CLASS	SUB. CODE	SUBJECT	Hrs.
1.	II M.Sc	P4RIMTCC13	STOCHASTIC PROCESSES	7
2.	I M.Sc	P2R2MADSE2:IP	PROGRAMMING IN C++	6
3.	III CS 'C'	U6RICSIDC2	QUANTITATIVE APTITUDE - II	3
4.	I CS 'B'	U2R2MCSAC3 ^{NM}	NUMERICAL METHODS & STATISTICS	5
TOTAL				(21)

Hr.	1	2	3	4	5
D ₀					
D ₁	C++ I	Lab M.Sc	II M.Sc NET LAB	I CS 'B'	
D ₂	C++ I	Lab M.Sc	I CS 'B'		III CS 'C'
D ₃	II M.Sc	I M.Sc	III CS 'C'		I M.Sc
D ₄	II M.Sc		III CS 'C'	I CS 'B'	
D ₅			II M.Sc	I CS 'B'	
D ₆	I M.Sc	II M.Sc	I CS 'B'	I M.Sc	

UNIT I: Stochastic Processes

Introduction - Specification of Stochastic Processes
 - Stationary Processes - Stationary - Gaussian Processes - Markov chains - Definitions and Examples - Higher Transition Probabilities - Generalization of Independent Bernoulli trials - Sequence of chain-Dependent trials.

UNIT II: Classification of States and Chains

Communication relations - Class Property - Classification of chains - Transient and Persistent (recurrent) states - Related Theorems - Determination of Higher Transition Probabilities - Stability of a Markov system - Stationary Distribution - Theorem and Problems

UNIT III: Markov Processes with Discrete State Space

Poisson Process - Postulates for Poisson Process - Theorems and Problems - Properties of Poisson Process - Poisson Processes and related distributions - Generalisation of Poisson Process - Time dependent Poisson Processes - Birth and Death Process.

UNIT IV: Renewal Processes and Theory

Renewal Process in Discrete time - Relation

Date: 12-01-2023

Topic: Theorem.

Day Order: D5

Hour: 3

- ① The state 'j' is persistent (or) transient according as

$$\sum_{n=0}^{\infty} P_{jj}^{(n)} = \infty \text{ (or) } < \infty.$$

↳ Basic Limit Theorem of Renewal Theory.

- ② If state k is persistent null, then for every j
 $\lim_{n \rightarrow \infty} P_{jk}^{(n)} \rightarrow 0$ and if state k is aperiodic, persistent non-null then $\lim_{n \rightarrow \infty} P_{jk}^{(n)} \rightarrow \frac{F_{jk}}{\mu_{kk}}$.

Date: 13-01-2023

Topic: Theorem

Day Order: D6

Hour: 2, 4

- (i) In an irreducible chain, all the states are of the same type
 (ii) They are either all transient, all persistent null or all persistent non-null
 (iii) All the states are aperiodic and in the latter case they all have the same period.

0.11.11

Date:

Topic:

Day Order:

Hour:

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