ST. ALOYSIUS' COLLEGE
(AUTONOMOUS) JABALPUR

ST. ALOYSIUS COLLEGE (AUTO), JABALPUR
DEPARTMENT OF MATHEMATICS 2018-19
M. Sc. (MATHEMATICS)
THIRD SEMESTER
CORE PAPER I : OPERATIONS RESEARCH -1

Max Mks 40
CREDIT 5

Unit-I: Operations Research and its scope. Origin and Development of Operations Research, Characteristics of Operations Research, Phase of Operations Research, Uses of Operations Research, Role of Operations Research in Decision Making.

Unit-II: Linear Programming Problem, Mathematical Formulation of the Linear Programming Problem, Solution of LPP by Graphical method, Solution of LPP by Simplex method.

Unit-III: Solution of a Linear Programming Problem by Big-M method, Solution of LPP by Two phase method, concept of duality, Advantages of duality, Dual simplex method, Primal of dual Correspondence.

Unit-IV: Transportation problem, Initial basic feasible solution by North-West Corner Rule,Row Minima Method, Column Minima Method, Matrix Minima Method and Vogel's Approximation method, Optimality test by MODI method, Degeneracy in Transportation Problem, Unbalanced Transportation problem .

Unit-V: Replacement problem: Replacement Policy Theorem, Concepts: Money Value, Present worth factor discount, Replacement problem when money value is constant / money value changes with Time, Individual replacement , Group replacement .

Books recommended:

Text books:

1. S.D. Sharma, Operations Research.

Reference books:

1. Kanti Swarup, P.K. Gupta and Manmohan, Operations Research, Sultan Chand & Sons, New Delhi..
2. F.S. Hiller and G.J. Lieberman, Industrial Engineering Series, 1995(This book comes with a CD containing software)

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DEPARTMENT OF MATHEMATICS 2019-20
M. Sc. (MATHEMATICS)
THIRD SEMESTER
CORE PAPER II : SPECIAL FUNCTIONS

MAX MARKS :40
CREDIT 5

Unit-I: Gamma and Beta Functions : The Euler or Mascheroni Constant γ, Gamma Function, A series for $\Gamma'(z) / \Gamma(z)$, Difference equation $\Gamma(z+1) = z\Gamma(z)$, Euler's integral for $\Gamma(z)$, Beta function, value of $\Gamma(z)\,\Gamma(1-z)$, Factorial Function, Legendre's duplication formula, Gauss multiplication theorem, Relations between functions of z and 1 –z.

Unit-II: Hypergoemetric and Generalized Hypergeometric functions: Function 2F1 (a,b;c;z) A simple integral form evaluation of 2F1 (a,b;c;z) Contiguous function relations, Hyper geometrical differential equation and its solutions, F (a,b;c;z) as function of its parameters, Elementary series manipulations, Simple transformation,

Unit-III: Bessel function , Definition of Jn (z), Bessel's differential equation, Generating function for Jn (z), Recurrence Relations for Jn (z), Bessel's integral with index half and an odd integer, Orthogonality of Bessel Functions .

Unit-IV: Generating function for Legendre polynomials , Rodrigues formula, Bateman's generating function, Additional generating functions, Hypergeometric forms of Pn (x) , Special properties of Pn(x), Some more generating functions, Laplace's first integral form, Orthogonality.

Unit-V: Hermite polynomial : Definition of Hermite polynomials Hn(x), Pure recurrence relations, Differential recurrence relations, Rodrigue's formula, Other generating functions, Orthogonality, Expansion of polynomials, more generating functions..

Books Recommended ;

Text books:

1- Rainville, E.D, ; Special Functions, The Macmillan co., New york 1971,
2- Srivastava, H.M. Gupta, K.C. and Goyal, S.P.; The H-functions of One and Two Variables with applications, South Asian Publication, New Delhi.
3- Saran, N., Sharma S.D. and Trivedi, - Special Functions with application, Pragati prakashan, 1986.

Reference Books.

1- Lebdev, N.N, Special Functions and Their Applications, Prentice Hall, Englewood Cliffs, New jersey, USA 1995.
2- Whittaker, E.T. and Watson, G.N., A Course of Modern Analysis Cambridge University Press, London, 1963.

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DEPARTMENT OF MATHEMATICS 2018-20
M. Sc. (MATHEMATICS)
THIRD SEMESTER
CORE PAPER III : NUMERICAL METHODS I

MAX MARKS = 40
CREDIT 5

UNIT -I : Hermite Interpolation Piecewise Interpolation, Piecewise Linear Interpolation, Piecewise Quadratic Interpolation, Piecewise Cubic Interpolation, , Piecewise Cubic Interpolation using Hermite Type Data, spline interpolation, Quadratic spline interpolation,

UNIT-II : Cubic spline interpolation,Natural Spline. Bivariate interpolation, Lagrange Bivariate interpolation, Newton's Bivariate interpolation for Equispaced Points

UNIT-III : Approximation ,L^p Norm, Euclidean Norm and Uniform Norm for Discrete Data and Continuous Data, Least squares Aproximation, Gram-Schmidt Orthogonalizing Process, Legendre Polynomials, Chebyshev Polynomials

UNIT-IV : Uniform Approximation, Uniform (minimax) Polinomial Approximation(Chebyshev Approximation), , Chebyshev Polynomials Approximation and Lanczos Economization, Rational Approximation .

UNIT-V : Numerical differentiation, Method Based on Interpolation, Non-uniform Nodal Points (Linear Interpolation, Quadratic Interpolation), Uniform Nodal Points (Linear Interpolation, Quadratic Interpolation), Method Based on Finite Differences, Method Based on Undetermined Coefficients.

Books Recommended ;

Text Book :
Numerical Method for scientific and Engineering computation by M.K. Jain , S.R.K. Iyenger , R.K. Jain south Edition (2003) , New Age .

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DEPARTMENT OF MATHEMATICS 2019-20
M. Sc. (MATHEMATICS)
THIRD SEMESTER

CORE ELECTIVE PAPER IV (A): PROGRAMMING IN C MAX MARKS: 100

CREDIT: 5

Unit-1: An overview of programming languages , Programmes development, functions Variables and Constants Expressions. Formatting sources files continuation character, the Processors.

Unit-2: Scaler data type-Declarations, different types of integers. Different kinds of Integer Constants Floating-point type Initialization, Mixing types, Explicit conversions-casts. Enumeration types. The void data type , Type defs.

Unit-3: Control flow-Conditional Branching, the switch statement. Looping. Nested Loops, the Break and Continue Statement. The Goto Statement Infinite Loops. Operators and Expressions-Precidence and Associatively. Unary plus and Minus operator. Binary, Arithmetic operator, arithmetic assignment operators.

Unit-4: Increment and Decrement operator. Comma Operator, Relational Operators, Logical Operators bit-manipulation operators Bitwise assignment operators, size of operators, Conditional operators. Array and multi dimentional arrays. Storage Classes-fixed vs. Automatic duration scope, global.

Unit-5: The Register Specifier Structures and Unions, Pointers. Developing a C Program: Introduction, Common Programming Error, Program testing and debugging, Program Efficiency. File management in C:Introduction, defining a file, closing a file, input/output operation On files, error handling during I/O operation.

Reference Books:

1. Samuel P.Harkison and Gly L Steels Jr.C:A reference manuel, II Edition ball 1984
2. Brain W Keringham & Dennis M Richie the C Programmed Language II edition(ANSI features)
3. Prentice Hall 1989.

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DEPARTMENT OF MATHEMATICS 2016-19
M. Sc. (MATHEMATICS)
THIRD SEMESTER

CORE ELECTIVE PAPER IV (B): FUNCTIONAL ANALYSIS - II MAX MARKS : 40
CREDIT: 5

Unit-I: Uniform boundedness theorem and some of its consequences, open mapping and closed graph theorem.

Unit-II: Eeflixive spaces, Hilbert spaces, Orthonormal sets, Pythagorean Theorem, Gram-Schmidt Orthogonalization Process, Bessel's inequality.

Unit-III:. Othogonal Complement, Complete orthonormal sets and Parseval's identity, Projection Mapping, Projection theorem.

Unit-IV: Structure of Hilbert spaces, Riesz representation theorem, Adjoint of an operator on a Hilbert space, Reflexivity of Hilbert spaces.

Unit-V: Self -Adjoint operators, Positive Operators, Orthogonal Projection, Normal and Unitary operators.

Text Book:

1. G. F. Simmons, Topology and Modern Analysis , McGraw Hill International Edition, 1963.
2. E. Kreyszig, Introductory Functional Analysis with Applications, John Wiley & Sons, New York, 1978.

Reference Books:

1. R. E. Edward, Functional Analysis, Dover Publication, New York, 1995.
2. P. K. Jain, O. P. Ahuja and Khalil Ahmed, Functional Analysis, New Age International (P) Ltd. Publ.

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DEPARTMENT OF MATHEMATICS 2018-19
M. Sc. (MATHEMATICS)
THIRD SEMESTER

OPEN ELECTIVE PAPER VI (A): ADVANCED DISCRETE MATHEMATICS Max MARKS
CREDIT: 5

Unit-I: Algebraic Structures : Introduction, Algebraic Systems : Examples and General Properties : Definition and examples, Some Simple Algebraic Systems and General properties, Homomorphism and isomorphism, congruence relation, Semigroups and Monoids : Definitions and Examples, Homomorphism of Semigroups and Monoids.

Unit-II: Lattices: Lattices as Partially Ordered Sets : Definition and Examples, Principle of duality, Some Properties of Lattices, Lattices as Algebraic Systems, Sub lattices, Direct product, and Homomorphism.

Unit-III: Some special Lattices, e.g. Complete, Complemented and Distributive Lattices, Boolean Algebra : Definition and Examples, Sub algebra, Direct product and Homomorphism, join irreducible, atoms and antiatoms.

Unit-IV: Graph Theory: Definition of a graph, applications, Incidence and degree, Isolated and pendant vertices, Null graph, Path and Circuits: Isomorphism, Subgraphs, Walks, Paths and circuits, Connected graphs, disconnected graphs, and components, Euler graph.

Unit-V: Trees: Trees and its properties, minimally connected graph, Pendant vertices in a tree, distance and centers in a tree, rooted and binary tree. Levels in binary tree, height of a tree, Spanning trees, rank and nullity.

Text Books:

1. J. P. Tremblay & R. Manohar, Discrete Mathematical Structures with Applications to Computer Science, McGraw-Hill Book Co., 1997(for Units I, II, and III).
2. N. Deo, Graph Theory with Applications to Engineering and Computer Sciences, Prentice Hall of India (for Units IV and V).

Reference Books:

1. C. L. Liu, Elements of Discrete Mathematics, McGraw-Hill Book Co.
2. S. Wiitala, Discrete Mathematics- A Unified Approach, McGraw-Hill Book Co.
3. Seymour Lepschutz, Finite Mathematics, Schaum Series, MGH.
4. J. L. Gersting, Mathematical Structures for Computer Science (3rd ed.) Computer Science Press, New York.

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DEPARTMENT OF MATHEMATICS 2018-20
M. Sc. (MATHEMATICS)
THIRD SEMESTER
OPEN ELECTIVE PAPER VB: MATHEMATICAL STATISTICS

MAX MARKS 40
CREDIT: 5

UNIT –I : The probability set function –Random variables –The probability density function – The distribution function-Mathematical expectations-Some special mathematical expectations – Chebyshev inequality.

UNIT – II Conditional probability –Marginal and conditional distributions-The Correlation coefficient-Stochastic Independence. The Binomial, Poisson, Gamma, chi-square normal distribution.

UNIT – III: Distributions of functions of Random variables –Sampling theory- Transformation of Variables of Discrete type-Transformation of Variables of the continues type.

UNIT – IV: The t and F Distributions – Distribution of order statistics –The moment –generating function Technique-The Distribution of X and.Limiting distribution –Stochastic convergence-Limiting moment generating function-The central limit theorem –Some theorems on Limiting Distribution.

UNIT-V: Point estimation-Measures of quality of estimations-confidence intervals for meansconfidence intervals for difference of Means-confidence intervals for variances. A Sufficient statistics for a parameters- The Rao –Blackwell theorem-The Rao Cramer's inequality.

Text Book:

- Introduction to Mathematical Statistics by Robert V. Hogg Allen T. Craig, Macmillan publishing co., Inc., New York -1978,

References :

1. Mathematical Statistics by J.N. Kapur, H.C. Saxena- S. Chand Publications
2. Introduction to Mathematical Statistics Robert V Hogg, Allencraig, Joseph W Mekean , Pearson Publishers

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DEPARTMENT OF MATHEMATICS 2018-20
M. Sc. (MATHEMATICS)
FOURTH SEMESTER
CORE PAPER I : OPERATIONS RESEARCH-II

MAX MARKS 40
CREDIT: 5

Unit-1 Assignment problem, Mathematical formulation of assignment problem, Fundamental theorems-Reduction Theorem, Assignment algorithm, rules to draw minimum number of lines. Solution of assignment problem by Hungarian Method, Unbalanced Assignment Problem, Maximal Assignment problem, Traveling Salesman problem.

Unit-2 Sequencing, terminology and notations, Solution of sequencing problem, Johnson's Algorithm for n jobs two machines, processing n jobs on two machines, Algorithm for n jobs on three machines, processing n jobs on three machines, n jobs on m machines, processing two jobs through m machines, graphical methods.

Unit -3 Game theory, characteristics Two persons, Zero-sum Games, Two persons non zero sum game, Strategy, Pay of Matrix, Maximin - Minimax principle, rules for determining saddle point, value of the game, games with /without saddle points- Mixed strategies, Graphical solution of 2xm and mx2 games, principal of dominance, flow chart , limitations of Game theory.

Unit IV Project Management by CPM-PERT , Introduction, Historical Developments, Applications of CPM-PERT, Basic steps Network diagram representation, Fulkerson's Rule Backward Pass Computation, Forward Pass Computation ,total Float, Free float , Independent float, Construction of network, critical Path Method, PERT Calculation, Disadvantage of network Techniques

Unit V Inventory theory ,Types of Inventory models Cost involved in Inventory Problems, Variables in Inventory Problems, average inventory, Concept of EOQ. Tabular method & graphical method. Economic lot size system with uniform and non uniform demand, Economic lot size with finite rate of replacement, EOQ model when shortages are allowed ,Uniform Demand, Non uniform Demand, Production lot size Model , Multi items deterministic models with one Constraint, Limitation on Investment, Floor Space and Inventory.

Text books:

1. S. D. Sharma, Operations Research.

Reference books:

1. Kanti Swarup, P.K. Gupta and Manmohan, Operations Research, Sultan Chand & Sons, New Delhi.
2. F. S. Hiller and G.J. Lieberman, Industrial Engineering Series, 1995(This book comes with a CD containing software)
3. H. Hadley, Linear and Dynamic programming, Addison-Wesley Reading Mass.
4. H.A. Taha, Operations Research- An introduction, Macmillan Publishing Co. Inc. New York.
5. Prem Kumar Gupta and D. S. Hira, Operations Research, an Introduction, S. Chand & Company Ltd. New Delhi.
6. N. S. Kambo, mathematical Programming Techniques, Affiliated East- West Pvt. Ltd. New Delhi, Madras.

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DEPARTMENT OF MATHEMATICS 2018-20
M. Sc. (MATHEMATICS)
FOURTH SEMESTER
CORE PAPER II : NUMERICAL METHODS II

MAX MARKS : 40
CREDIT 5

Unit-I: Extrapolation methods, Richardson's Extrapolation, Ordinary differential equations, Reduction of Higher order Equations to the system of first order Differential Equations, system of Linear first order Differential Equations with Constant Coefficients, Difference Equations.

Unit-II: Multi step methods,Explicit Multistep Methods, Adams-Bashforth Methods(i=0), Nystrom Methods (i=1), Implicit Multistep Methods, Adams-Moulton Method (i=0),Milne-Simpson Method (i=1), Predicator and corrector methods, $P(EC)^m E$ Method, PM_pCM_c Method.

Unit-III: Ordinary Differential Equations: Boundary value problems, Initial Value Problem Method (Shooting method), Boundary conditions of the first kind, Boundary conditions of the second kind, Boundary conditions of the third kind.

Unit-IV: Finite difference methods, Linear Second Order Differential Equation, Derivative Boundary Conditions, Fourth Order Method when u' is absent, Nonlinear Second Order Differential Equation u''=f(x,u), Newton-Raphson Method, Nonlinear Second Order Differential Equation u''=f(x,u,u').

Unit-V Finite element method, Solution of the Variation Problem,Ritz Method,Finite Elements, Linear Lagrange Polynomial, Ritz Finite element method, Finite element Solution of Linear Boundary value problems, Assembly of element Equations, Mixed Boundary Conditions .

Text Book

Numerical Method for scientific and Engineering computation by M.K. Jain, S.R. K.Iyenger, R. K. Jain south Edition(2003), New Age.

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DEPARTMENT OF MATHEMATICS 2018-20
M. Sc. (MATHEMATICS)
FOURTH SEMESTER
CORE ELECTIVE PAPER – III (A) : DIVERGENT SERIES

MAX MARKS : 40
CREDIT: 5

Unit-1: Definitions and Examples of Order Relations (big 0, little 0), Asymptotic Relation. The method of Arithmetic means, Holder means, Abel means. The Transformation matrix and regularity theorem for each mean.

Unit-2: Abel's Transformation and its applications, Cesaro means. Definition and examples, Identities relating Cesaro sums, change of order of summation. Relation between Cesaro and Abel's Summability: Theorems 55, 56, and 57.

Unit-3: Consistency theorem for Cesaro Summability, Regularity Theorems for Cesaro's method, Cesaro means of both integral and non-integral orders.

Unit-4: Limitation Theorems, Tauberian conditions and Tauberian Theorems. Littlewood's extension of Tauber's first Theorem.

Unit-5: Abelian method (A, λ) of summability, Regularity of Abelian means, Inclusion theorem, Euler mean, Regularity theorem.

Text Books:

1. G.H. Hardy, Divergent Series, Oxford, University Press, 1948.

Reference Books:

1. A. Dold and B. Eckmann (eds.) Absolute Summability of Fourier Series, Lecture Notes in Math. Springer-Verlag, 1984.

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M. Sc. (MATHEMATICS)
FOURTH SEMESTER
CORE ELECTIVE PAPER IV (B): PROGRAMMING IN C++ MAX. MARKS: 25
CREDIT: 5

Unit 1: object oriented programming, class and scope, nested classes, pointer class member class initialization, assignment and distribution.

Unit 2: over load function and operators templates including class templates, class inheritance and subtyping, multiple and inheritance.

Unit 3: data structure analysis of algorithm q, W, O, o, w notations, lists , stacks, and Queues, sequential and linked representation, tree, binary tree – search tree implementation, B – tree (concept only)

Unit 4: hashing – open and closed, sorting :sort, shell sort , heap sort and their analysis.

data base system –role of data base system, data base system architecture.

Unit 5: introduction to relational algebra and relational calculus. SQL-O basis features lncluding views, integrity constrains, data base design normalization upto BCNF, distributive system– clouds.

Reference books:

1. B, stroustrup, the C++ programming language, Addison – Wesley.
2. C.I date, introduction to data base system, Addison- Wesley.

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ST. ALOYSIUS COLLEGE (AUTO), JABALPUR
DEPARTMENT OF MATHEMATICS 2018-20
M. SC. (MATHEMATICS) FORTH SEMESTER

CORE ELECTIVE PAPER IV-(A) INTEGRATION THEORY MAX MARKS 40
CREDIT: 5

Unit I: Measure spaces, Measurable functions, Integration, Convergence theorems.

Unit II: Signed measures, The Radon-Nikodym theorem, Lebesgue decomposition, LP spaces, Riesz representation theorem.

Unit III: Outer measure and measurability, The extension theorem, Lebesgue- Steiltjes integral, Product measures, Fubini's theorem.

Unit IV: Baire sets, Baire Measure, Continuous functions with compact support, Regularity of measures on locally compact spaces.

Unit V: Integration of continuous functions with compact support, Riesz- Markoff theorem.

Recommanded Books :

1. H.L. Royden, Real Analysis, Mc millan Pub. Co. Inc. New York, 4th Edition, 1993.
2. G.de.Barra., Measure Theory and Integration, Wiley Eastern Limited, 1981
3. Inder K. Rana. An introduction to Measure & Integration Narosa Pub. House, Delhi,1997.
4. P.K. Jain, N.P. Gupta, Lebesgure Measure and Interation New Age International (P) Ltd., New Delhi, 1986.

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DEPARTMENT OF MATHEMATICS 2018-20
M. Sc. (MATHEMATICS)
FOURTH SEMESTER

CORE ELECTIVE PAPER IV (B): FUZZY SETS AND THEIR APPLICATIONS

MAX MARKS 4
CREDIT 5

Unit-I: Fuzzy set, Membership function, Basic definition and concepts, Types of Fuzzy sets- normal fuzzy set, α-cut set, strong α-cut, convex fuzzy set, necessary and sufficient condition for convexity of a fuzzy set,

Unit II: Properties of fuzzy sets- commutative, associative, distributive, idempotent, identity, involution, De-Morgan's laws, and their proofs, equality of two fuzzy sets, examples.

Unit-III: Operations on fuzzy sets, Union, Intersection, Complement of a fuzzy set, Decomposition of fuzzy sets, Cartesian Product, Algebraic product, Product of a fuzzy set with a crisp number, Bounded sum and difference, t-norms, t-conorms, Power of a fuzzy set, Disjunctive sum of two fuzzy sets, examples.

Unit-IV: The Zadeh Extension Principle, Fuzzy numbers, Fuzzy arithmetic

Unit V: Fuzzy relations, Crisp v/s Fuzzy relations, Composite Fuzzy relation, Binary Fuzzy relations, Fuzzy equivalence relation, Fuzzy compatibility relation, Fuzzy relation equation, Similarity relations Fuzzy graphs.

Fuzzy logic- classical logic, multivalued logic, Fuzzy prepositions, Fuzzy quantifiers, Linguistic variables and Hedges, Inference from conditional Fuzzy preposition

Text Book-

1. G.J. Klir and Yuan, Fuzzy sets and Fuzzy Logic: The compositional rule of inference, Prentice Hall of India, New Delhi, 1995.
2. H.J. Zimmermann, Fuzzy set Theory and its Applications, Allied publishers Ltd, New Delhi 1991.

Reference Books:

1. Pundir and Pundir ,Fuzzy Sets and their Applications , Pragati Prakashan

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DEPARTMENT OF MATHEMATICS 2018-19
M. Sc. (MATHEMATICS)
FOURTH SEMESTER
OPEN ELECTIVE PAPER V(E): MATHEMATICAL MODELING

MAX MARKS : 40
CREDIT 5

Unit-I: Simple situations requiring mathematical modeling, techniques of mathematical modeling, Classifications, Characteristics and limitations of mathematical models, Some simple illustrations.

Unit-II: Mathematical modeling through differential equations, linear growth and decay models, Non linear growth and decay models, Compartment models, Mathematical modeling in dynamics through ordinary differential equations of first order.

Unit-III: Mathematical models through difference equations, some simple models, Basic theory of linear difference equations with constant coefficients, Mathematical modeling through difference equations in economic and finance, Mathematical modeling through difference equations in population dynamic and genetics.

Unit-IV: Situations that can be modeled through graphs. Mathematical models in terms of Directed graphs, Mathematical models in terms of signed graphs, Mathematical models in terms of weighted digraphs.

Unit V Mathematical modeling through linear programming, Linear programming models in forest management. Transportation and assignment models.

References:

1. J. N. Kapur, Mathematical Modeling, Wiley Eastern.
2. D. N. Burghes, Mathematical Modeling in the Social Management and Life Science, Ellie Herwood and John Wiley.
3. F. Charlton, Ordinary Differential and Difference Equations, Van Nostrand.

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DEPARTMENT OF MATHEMATICS 2018-19
M. Sc. (MATHEMATICS)
FOURTH SEMESTER
OPEN ELECTIVE PAPER VIII : WAVELETS

MAX MARKS 40
CREDIT: 5

Unit I. Fourier Analysis: Fourier and inverse Fourier transforms, Convolution and delta function, Fourier transform of Square integrable functions. Fourier series, Basic Convergence Theory and Poisson's Summation formula.

Unit II. Wavelet Transforms and Time Frequency Analysis: The Gabor Transform. Short-time Fourier transforms and the uncertainity principle. The integral wavelet transforms Dyadic wavelets and inversions. Frames.

Unit III. Wavelet Series. Scaling Functions and Wavelets: Multi resolution analysis, scaling functions with finite two scale relations. Direct sum decomposition of L2 (R) .

Unit IV. Linear phase filtering, Compactly supported wavelets, Wavelets and their duals, Orthogonal Wavelets and Wavelet packets, Example of orthogonal Wavelets.

Unit V. Identification of orthogonal two-scale symbols, Construction of Compactly supported orthogonal wavelets, Orthogonal wavelet packets, orthogonal decomposition of wavelet series.

References:

1. C.K.Chui, A First Course in Wavelets, Academic press NY 1996.
2. I. Daubechies, Ten Lectures in Wavelets, Society for Industrial and Applied Maths, 1992.

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