॥संहती कार्य साधिका, शिलंम परम भूषणंम॥

Shetkari Shikshan Prasarak Mandal's

KRISHNA MAHAVIDYALYA RETHARE BK.

Department of Mathematics

PROGRAM SPECIFIC OUTCOMES AND COURSE OUTCOMES FOR OUTCOME-BASED EDUCATION

Shetkari Shikshan Prasarak Mandal's

KRISHNA MAHAVIDYALAYA, RETHARE BK

DEPARTMENT OF MATHEMATICS

PROGRAMME OUTCOMES

Academic Year 2020-2021

After completion of the B. Sc. program, the students will develop ability:

PO A. Recognize that Mathematics permeates the world around us.
PO B. Appreciate the usefulness, power and beauty of Mathematics.
PO C. Enjoy Mathematics and develop patience and persistence when solving the problem.
PO D. Understand and be able to use the language symbols and notations of Mathematics.
PO E. Develop Mathematical curiosity and use inductive as well as deductive reasoning when solving problems.
PO F. Became confident in using Mathematics to analyze and solve problems both in college and real life situations.
PO G. Develop knowledge, skills and attitudes necessary to pursue further studies in Mathematics.
PO H. Develop abstract, logical and critical thinking and the ability to reflect critically upon their work and the work of others.
PO I. Develop ability to critically assess numerical and graphical information and to prepare for future challenges.

Shetkari Shikshan Prasarak Mandal's

KRISHNA MAHAVIDYALAYA, RETHARE BK

DEPARTMENT OF MATHEMATICS

PROGRAMME SPECIFIC OUTCOMES

Academic Year 2020-2021

PSO A. Though knowledge and understanding students develop mathematical reasoning to make deductions and solve problems.

PSO B. Mathematical inquiry encourages students to become risk takers, inquires and critical thinkers.

PSO C. At the end of the course students should be able to communicate mathematical ideas, reasoning and findings.

PSO D. Students are encouraged to share their thinking with teachers and peers and to examine different problem solving strategies.

PSO E. Students will develop the knowledge, skills and attitudes necessary to pursue further studies in Mathematics.

PSO F. Students will enjoy Mathematics and develop patience and persistence when solving the problem.

PSO G. Students will develop abstract, logical and critical thinking and the ability to reflect critically upon their work and the work of others.

PSO H. Students will understand and be able to use the language symbols and notations of Mathematics.

Shetkari Shikshan Prasarak Mandal's

KRISHNA MAHAVIDYALAYA, RETHARE BK

DEPARTMENT OF Mathematics

MATHEMATICS COURSE OUTCOMES

Academic Year 2020-2021

B.Sc. (Mathematics) Annexure-C

Course Outcomes: B.Sc. I Paper I: DSC-5A Differential Calculus

By the end of this Course students should be able to know about:

CO 1. Understand De-Moivre's theorem, examples and applications.

CO 2. Understand Hyperbolic functions and its properties.

CO 3. Representation of the curves in parametric and polar co-ordinates.

CO 4. Apply Leibnitz's theorem to obtain higher derivatives of product of two differentiable functions.

CO 5. Understand Euler's theorem on homogenous functions and solve examples on it.

CO 6. Understand Maxima and Minima for functions of two variables and Lagrange's method of undetermined multipliers.

B.Sc. I Paper II : DSC-6A Calculus

By the end of this Course students should be able to know about:

CO 1. Understand Mean value Theorems, Rolle's mean Theorem, Lagrange's mean value theorem, Cauchy's mean value theorem and examples.

CO 2. Understand Taylor's and Maclaurin's theorem.

CO 3. Understand different indeterminate forms Solve indeterminate forms.

CO 4. Evaluate the limit and examine the continuity of a function at a point.

CO 5. Understand the consequences of mean value theorems for differentiable functions.

Paper III: DSC-5B Differential Equations

By the end of this Course students should be able to know about:

CO 1. Understand types of differential equations.

CO 2. Solve different types of ordinary differential equations.

CO 3. Understand applications of differential equations.

Paper IV: DSC-6B Higher Order Ordinary Differential Equations and Partial Order Differential Equations:

By the end of this Course students should be able to know about:

CO 1. Understand second order Differential equations.

CO 2. Understand complete solution of different methods and examples.

CO 3. Understand ordinary simultaneous and total differential equations and examples.

CO 4. Understand Partial differential equations, order and degree, linear and non-linear partial differential equations and examples.

CO 5. Understand Lagrange's equations and Charpits method and solve examples on that.

Paper V: DSC-5C Real Analysis -I

By the end of this Course students should be able to know about:

CO 1. Understand types of functions and how to identify them.

CO 2. Use mathematical induction to prove various properties.

CO 3. Understand the basic ideas of Real Analysis

CO 4. Prove order properties of real numbers, completeness property and the Archimedean properties.

Paper VI : DSC-6C Algebra -I

By the end of this Course students should be able to know about:

CO 1. Understand properties of matrices.

CO 2. Solve system of linear homogenous equations and linear non-homogenous equations.

CO 3. Find Eigen values and Eigen vectors.

CO 4. Construct permutation group and relate it to the other groups

CO 5. Classify the various types of the groups and subgroups

Paper VII: DSC-5CD Real Analysis -II

By the end of this Course students should be able to know about:

CO 1. Understand sequence and subsequence

CO 2. Prove the Bolzano-Weirestrass theorem

CO 3. Derive Cauchy Convergence criterion

CO 4. Find convergence of series.

CO 5. Apply Leibnitz test.

Paper VIII: DSC-6D Algebra –II

By the end of this Course students should be able to know about:

CO 1. Prove Lagrange's theorem

CO 2. Derive Fermat's theorem.

CO 3. Understand properties of normal subgroups, factor group.

CO 4. Define homomorphism and isomorphism in group and rings.

CO 5. Derive basic properties of ring and subrings.

Paper IX: DSE-E9 Mathematical Analysis

By the end of this Course students should be able to know about:

CO 1. The integrations of bounded function on a closed and bounded interval.

CO 2. Some of the families and properties of Riemann integrable functions.

CO 3. The applications of the fundamental theorems of integrations.

CO 4. Extension of Riemann integral to the improper integrals when either the interval of integration is infinite or the integrand has infinite limits at a finite number of points on the interval of integration.

CO 5. The expansion of functions in Fourier series and half range Fourier series

Paper X: DSE-E10 Abstract Algebra

By the end of this Course students should be able to know about:

CO 1. Basic concepts of group and rings with examples.

CO 2. Identify whether the given set with the compositions form Ring, Integral domain or field.

CO 3. Understand the difference between the concepts Group and Ring

CO 4. Apply fundamental theorem, isomorphism theorems of groups to prove this theorems for rings.

CO 5. Understand the concepts of polynomial rings , unique factorization domain .

Paper XI: DSE-E11 Optimization Techniques

By the end of this Course students should be able to know about:

CO 1. Provide student basic knowledge of a range of operation research models and techniques, which can be applied to variety of industrial and real life applications.

CO 2. Formulate and apply suitable methods to solve problems.

CO 3. Identify and select procedures for various sequencing assignment transportation problems.

CO 4. Identify and select suitable methods for various games.

CO 5. To apply linear programming and find algebraic solution to games.

Paper XII: DSE-E12 Integral Transform

By the end of this Course students should be able to know about:

CO 1. Understand concept of Laplace transform.

CO 2. Apply properties of Laplace transform to solve differential equations.

CO 3. Understand the relation between Laplace and Fourier transform.

CO 4. Understand infinite Fourier transform.

CO 5. Apply Fourier transform to solve real life problem.

Paper XIII: DSE-F9 Metric space

By the end of this Course students should be able to know about:

CO 1. Acquire the knowledge of notion of metric space, open set and closed set.

CO 2. Demonstrate the properties of continuous functions on metric space.

CO 3. Apply the notion of metric space to continuous function on metric space.

CO 4. Understand the basic concept of connectedness, completeness and compactness of metric spaces.

CO 5. Appreciate process of abstraction of limits and continuity to metric space.

Paper XIV: DSE-F10 Linear Algebra

By the end of this Course students should be able to know about:

CO 1. Understand notion of vector space basis. .

CO 2. Understand concept of linear transformation and its application to real life situation.

CO 3.work out algebra of linear transformation.

CO 4. Appreciate connection between linear transformation and matrices.

CO 5. Work out Eigenvalues, Eigen vectors and its connection with real life situation.

Paper XV: DSE-F11 Complex Analysis

By the end of this Course students should be able to know about:

CO 1. Learn basic concepts of function of complex variables.

CO 2. Be introduced to concept of analytic functions.

CO 3. Learn concept of complex integration and basic results thereof.

CO 4. Be introduced to concept of sequence and series of complex variables.

CO 5. Learn to apply concept of residues to evaluate certain real integrals.

Paper XVI: DSE-F12 Discrete Mathematics

By the end of this Course students should be able to know about:

CO 1. Use classical notations of logic: implications, equivalence, negation, proof by contradiction, proof by induction, and quantifiers.

CO 2. Apply notions in logic in other branches of mathematics.

CO 3. Know elementary algorithms: Searching algorithms, sorting, greedy algorithms, and their complexity.

CO 4. Apply concept of graph and trees to tackle real situations.

CO 5. Appreciate applications of shortest path algorithms in computer science

PRINCIPAL
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