KAKARAPARTIBHAVANARAYANACOLLEGE (Autonomous)
DepartmentOfMathematics

PROGRAMME	SEMESTER	TITLEOFTHEPAPER		COURSECODE	W.E.F
B.Voc(WS/IT)	I	**DISCRETEMATHEMATICS-I**		**R20WSMAT101A &R20ITMAT101A**	2022-23
TOTALNO.OFHOURSFOR TEACHING – LEARNING		**INSTRUCTIONAL HOURS FOR WEEK**	**DURATION OF SEMESTEREND EXAMINATION IN HOURS**	**MAXMARKS**	**CREDITS**
60 Hours		6Theory	3hours	60(SEE)+40(CIA)	5

COURSEOBJECTIVES

Theaimofthiscourseisto provide necessaryinformationtosolveproblemsonAlgebraand their applications.

COURSEOUTCOMES:

OnCompletionofthiscoursethe studentswillbeable to:

- Toknowthe conceptofAlgebra.
- KnowledgeofSpecialproducts,factorizing,HCF&LCMofalgebraicexpressions.
- Knowledgeoffractions,exponents&Fundamentaloperations.
- KnowledgeofRadicalform, similarradicals, addition, multiplication& divisionofradical&conjugates.
- AboutSimpleoperationswithcomplexnumbers.

UNIT –I:**Algebra**

1. FundamentalOperationswithnumberaddition,subtraction, multiplicationand division of numbers- exponentialandpowers–lawsofexponents–operationswithfractional.

2. Fundamental operations with algebraic expressions – differential types of polynomials, degreeofapolynomials –addition, multiplicationdivisionofalgebraicexpressions.

UNIT-II

1. Specialproductslikea^n-b^n, a^n+b^n etc.

2. Factorising-commonmonomialfactor,differenceoftwosequences,perfect squarebinomials, sumofdifferenceoftwocubes – grouping ofterms – factorsofa^n+b^{n}addition and subtraction of suitableterms–HCF&LCMofalgebraicexpressions.

UNIT– III

1. Fractions– thealgebraicsumoffractionsproductoffractions– quotientoftwo fractions &complexfractions.

2. Exponents–positivefractionalexponentnegativeintegralexponent – Rational exponents – general laws ofexponents.

UNIT-IV

1..Radicals–Radicalform–laws forradicalssimilarradicals– addition, multiplication& divisionofradical&conjugates.

UNIT-V

1. Simpleoperationwithcomplexnumbers–imaginarynumber– squarerootof√ -1 complexnumbers–algebraicaddition,subtraction, multiplication&divisionofsimplecomplex numbers.

Note:Problemsonlyonallthe above concepts

PRESCRIBEDBOOKS

MunayR. Spiegel,RobertE.MaverSchaum'soutlinesseriesCollegealgebra–1956 Edition
Chapters–1,2,4,5,6,7,8,9content&treatmentsasitis

ReferenceBooks:

BhavanariSatyanarayana& KunchamSyamPrasad DiscreteMathematics&Graphtheory,PrinticeHallofIndia,Learning,NewDelhi2009.

PaperSetting:

SectionA– One Question fromeachchapterofUnit–IV&Unit-V -TwoQuestionsfromUnit I,Unit II&Unit III. Section B -

Two Questions from each Unit.

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DepartmentOf Mathematics

Programme	Semester:	TitleofThe Course		CourseCode:		W.E.F
B.VOC(IT)& B.VOC(WT)	II	DiscreteMathematics–II		WSDM201A		2022-23
TotalNoofHoursfor Teaching – Learning		Instructional HoursforWeek	Duration of Semester End Examinationin Hours	MaxMarks		Credits
60 Hours		Theory	3 Hours	CIA	SEE	
		4		25	75	4

COURSEOBJECTIVES

Theaimofthiscourseisto provide necessaryinformationtosolveproblemson Algebraand their applications.

COURSEOUTCOME

- Knowledgeoftheconcept ofAlgebra .
- ToKnowtheFindingSolutionsinSpecialproducts,exponents,Fundamental operations ..
- Applicationsinclassicalmechanics.
- Knowledgeofthelattice
- KnowledgeoftheBooleanAlgebra

UNIT –I

Functionsandgraphs

Functionsoftwovariables-rectangularco-ordinatesystem-graphoftwo variables- graphing the functions y=f(x)

Simultaneous linear equations-linear equation of two unknowns-system of two linear equationsintwo unknowns-solutionsbyaddition,subtraction,solutionbysubstitution-system of three linear equation in three unknowns

Mathematicalinduction–principlesofmathematicalinduction

UNIT –II

Sets-definitionofaset –subset –set operations-Venndiagrams-algebraofsets –dualityof sets – finite sets – power sets

Functions–function-realvalidfunctions- compositionoffunction–one-one,onto,invertible -functionrecurresivelydefinedfunction

UNIT –III

VectorsandMatrices:

Introduction-vectors-matrices-matrixaddition&scalar multiplications-matrix multiplications-transpose-squarematrices-invertible(nonsingular)matrices-inverses-determinants-elementaryrow operations –Gaussian elimination

UNIT –IV

Lattice–boundedlattices-distributelattices-complements,complementedlattice

UNIT–V

Booleanalgebra:

Introduction –basic definition-duality- dualityprinciples-sumofproducts formofsets – sum–of-productsformfor booleantable,Booleanfunctions logicgates-circuits-truthtables-Boolean functions

NOTE:Problemsonlyonallthe above concepts

PRESCRIBEDBOOKS:

1. MurrayR-spiegal,RobertE.maver,Schaum'soutlineseries –collegealgebra- 1956 edition

Unit-I:chap:10,12,13,15,31ofabovetextbook

2. SEYMOURLIPSCHUTZ:marclipsonSchaum'soutlineseries-discretemathematics– second edition

Unit-II:chap-1,2,3,4;

Unit-III:chap-14,15content&treatmentsasitis

ReferenceBooks:

BhavanariSatyanarayana&kunchamsyamPrasad

Discretemathematics&graphtheory,printicehall ofIndia,learning,NewDelhi2009.

Blueprint:

SectionA–OneQuestionfromeachchapterofUnit–IV&Unit-V

-TwoQuestionsfromUnitI, UnitII&Unit III. Section B -

Two Questions from each Unit.

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Class:	Semester:	TitleofThe Paper:	PaperCode:	W.E.F
II B.VOC (IT&ITS) II B.VOC(WT)	III	Algebraicsolutionsandnumerical Analysis	WSMAT301A/ ITMAT301A	2022-23

TotalNoofHours for Teaching - Learning	InstructionalHours for Week		Duration of SemesterEnd Examination in Hours	MaxMarks		Credits
60 Hours	Theory	Practical	3 Hours	CIA	SEE	5
	4	2		25	75	

LEARNINGOBJECTIVES
Theaimofthiscourseisto learnthenatureofdifferent algebraicstructuresandtheir relationships.

CourseOutcomes:

Aftersuccessfulcompletionofthiscourse,thestudentwillbeableto;

- acquirethe basic knowledge and structureofProgressions.
- getthesignificanceofthenotationofaInterpolation.
- getthebehaviorofpermutations andoperationsonthem.
- Knowledgeofthe forwarddifferences,backward differences&centraldifferences with applications.
- Knowledgeofthepermutationsand combinations

UNIT– I

ArithmeticMean,Geometric mean– Progression.

UNIT– II

Standardlimits: Problemsonly.

UNIT– III

Interpolation-1

Forward differences , backward differences , central differences , symbolic relations , Newton"s forward difference formula and Newton's backward formula , derivations of Newton's forward , Newton's backward.

UNIT-IV

Interpolation-2

Central differences, Gauss forward interpolation , Gauss backward interpolation , stirling's difference
formula,Bessel'sdifference formula.

UNIT– V

Permutations and Combinations:- The number of Permutations of 'n' dissimilar things taken 'r' at a time – The number ofpermutations ofn dissimilar things, taken 'r' at a time when repetition of things is allowed any number of times -The number of a circular Permutations of' n' different thingstaken allat a time – The number of permutations of n things taken all at a time -when Some of them are a like and the rest dissimilar– The number of Combinations of n dissimilar things taken 'r' at a time.

ReferenceBooks:

1. 1.VictoryBCAMATHEMATICS SECOND YEAR
   Author:A.MallikarjunaSharma,Ch.Badarinarayana

2. Permutations&Combinations– AcademyTextBookofIntermediate
3. NumericalAnalysis–DeepthiPublications

BLUEPRINT

S.no.	UNIT	S.A.Q	L.A.Q
1.	Arithmeticmean,Geometricmean,Progressions	2	2
2.	Standardlimits	2	2
3.	Interpolation-1	1	2
4.	Interpolation-2	1	2
5.	PermutationsandCombinations	2	2
	Total	8	10

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Prpgramme	Semester:	TitleofThe Course		Course Code:		W.E.F
B.VOC(IT &ITS) &B.VOC(WT)	IV	NUMERICAL AND STATISTICALMETHODS		ITMAT401A &WSMAT401A		2022-23
TotalNoofHoursfor Teaching – Learning		Instructional HoursforWeek	Duration of Semester End Examinationin Hours	MaxMarks		Credits
60 Hours		Theory 4	3 Hours	CIA 25	SEE 75	4

Course Objectives:

- Tolearnhowtoperformerroranalysisfor arithmeticoperations.
- Todemonstrateworkingof variousnumericalmethods.
- Abasicunderstandingofthederivationanduseof methodsofinterpolation and numerical integration.
- knowledgeofvariousstatisticaltechniques.
- Todevelopstudentsunderstandingthroughlaboratoryactivitiestosolve problems related to abovestated concepts.

Course Outcomes:

- Skilltochooseandapplyappropriatenumerical methodstoobtain appropriate solutions to difficult mathematical problems.
- AbilitytoapplyvariousstatisticaltechniquessuchasMeasuresofCentral Tendency and Dispersion.
- Knowledgeofrelationshipbetweenvariablesusingthemethodof Correlation and Fit Analysis.
- SkilltoexecuteprogramsofvariousNumericalMethodsandStatistical techniques for solving mathematical problems
- KnowledgeoftheProbability.

UNIT 1: Solution of equations (polynomial and transcendental equations) interval having methods, secant, Regula – Falsi, Newton – Raphson methods, Fixed point Iteration method.

UNIT 2: Solutionofsystemoflinear equations:Gauss–Eleminationmethod, Gauss – Jordan,Gauss–Siedeliterationmethod,LU-Decompositionmethod,Eigenvalues and Eigen vectors of a square matrix.

UNIT 3: Interpolation: Forward and backward differences, Newton's forward and backward formula, Lagrange's interpolation and Lagrange's inverse interpolation formula.

Numerical differentiation, integration: Numerical differentiation forward and backward formula, Trapezoidal and Simpsons formulas.

StatisticalMethods:

UNIT 4: Basicconceptsanddefinitionofstatistics:Mean,Median, Mode, standarddeviation ,coefficientofvariation,skewnessandkurtosis,KarlPearsonCorrelation coefficient ,RankCorrelationandillustratedexamples.

UNIT 5 : Probability : Basic concepts and definition of probability , Probability axioms , Conditional probability , Addition and Multiplication theorem ofprobability (Based on set theory concepts) , Bayes theorem , problems and applications .

TEXTBOOKS:

1. SunilS.PatilNumericalandStatisticalMethodsEBPB.
2. S.S.ShastryIntroductorymethodsofNumericalAnalysisPHI(NewDelhi).

REFERENCEBOOKS:

1. GuptaS.C&KapuramVKFundamentalsofMathematicalStatistics.
2. NumericalAnalysis,SultanChand&SonsNewDelhi.

BLUEPRINT:

UNIT	SAQ	LAQ
I	2	2
II	2	2
III	2	2
IV	1	2
V	1	2