BACHELOR OF SCIENCE MATHEMATICS WITH COMPUTER APPLICATIONS REGULATIONS

ELIGIBILITY:

A Candidate who have passed in Higher Secondary Examinations with Mathematics as one of the paper under Higher Secondary Board of Examinations as per the norms set by the Government of Tamilnadu or an Examinations accepted as equivalent there to by Academic Council, subject to such condition as may be prescribed there to are permitted to appear and qualify for the **Bachelor of Science in Mathematics with Computer applications** Degree Examination of this college after a course of study of three academic years. A Candidate who have studied Business Mathematics and statistics Subject at HSC shall not be considered as equivalent to Mathematics.

OBJECTIVE OF THE COURSE:

1. To understand the basic rules of logic, including the role of axioms or assumptions
2. To Appreciate the role of Mathematical proof in formal deductive reasoning
3. To Proficiently construct logical arguments and rigorous proofs
4. To Formulate and solve abstract Mathematical problems
5. To Recognize real-world problems that are amenable to Mathematical analysis, and formulate Mathematical models of such problems
6. To Apply Mathematical methodologies to open-ended real-world problems

SCHEME OF EXAMINATIONS

Subject Code	Subject	Hrs of Instruc-tion	Exam Dura -tion (Hrs)	Max Marks			Credit Points
				CA	CE	Total	
First Semester							
Part – I							
16UTL11T 15UHL11H 15UML11M 15UFL11F	Tamil-I Hindi-I/ Malayalam-I/ French – I	6	3	25	75	100	4
Part – II							
16UEG12E	English - I	6	3	25	75	100	4
Part – III							
16UMA13A	Core –I: Classical Algebra	5	3	25	75	100	4
16UMA13B	Core -II: Calculus	5	3	25	75	100	4
16UMA1AA	Allied -I: Statistics – I	6	3	25	75	100	4
Part – IV							
15UFC1FA	Value Education: Environmental studies	2	3	-	50	50	2
		30				**550**	**22**
Second Semester							
Part – I							
16UTL21T 15UHL21H 15UML21M 15UFL21F	Tamil-II/ Hindi-II/ Malayalam-II/ French – II	6	3	25	75	100	4
Part – II							
16UEG22E	English - II	6	3	25	75	100	4
Part – III							
16UMA23A	Core -III: Analytical Geometry	5	3	25	75	100	4

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16UMA23B	Core -IV: MS Office	2	3	25	75	100	4
16UMA23P	Core Lab - I : MS Office	3	3	20	30	50	2
16UMA2AA	Allied- II: Statistics – II	6	3	25	75	100	4
Part – IV							
15UFC2FA	Value Education: Human Rights	2	3	-	50	50	2
		30				**600**	**24**
Third Semester							
Part – III							
16UMA33A	Core -V: Trigonometry, Vector Calculus and Fourier Series	5	3	25	75	100	4
16UMA33B	Core -VI : Statics	5	3	25	75	100	4
15UMA33C	Core -VII: Programming in C	3	3	20	55	75	3
16UMA33P	Core Lab – II: Programming in C	3	3	20	30	50	2
16UCI3AB	Allied - III : Business Accounting - I	6	3	25	75	100	4
Part – IV							
	NMEC-I :	2	3	-	50	50	2
16UMA3SA	Skill Based Subject –I : Operations Research-I	4	3	20	55	75	3

15UFC3FA/ 15UFC3FB/ 15UFC3FC/ 15UFC3FD/ 15UFC3FE	Tamil / Advanced Tamil (or) Yoga for Human Excellence / Women's Rights / Constitution of India	2	3	-	50	50	2
		30				**600**	**24**
Fourth Semester							
Part – III							
16UMA43A	Core -VIII: Differential Equations and Laplace Transforms	5	3	25	75	100	4
16UMA43B	Core -IX: Dynamics	5	3	25	75	100	4
15UMA43C	Core- X: Programming in C++	3	3	20	55	75	3
16UMA43P	Core Lab – III: Programming in C++	3	3	20	30	50	2
16UCI4AB	Allied - IV : Business Accounting - II	6	3	25	75	100	4
Part – IV							
	NMEC-II :	2	3	-	50	50	2
16UMA4SA	Skill Based Subject-II : Operations Research - II	4	3	20	55	75	3
15UFC4FA/ 15UFC4FB/ 15UFC4FC/	Tamil / Advanced Tamil (or)General Awareness	2	3	-	50	50	2
		30				**600**	**24**

Fifth Semester							
Part – III							
16UMA53A	Core- XI: Real Analysis	5	3	25	75	100	4
15UMA53B	Core -XII: Modern Algebra	5	3	25	75	100	4
15UMA53C	Core- XIII: Visual Basic	3	3	20	55	75	3
16UMA53D	Core -XIV : Discrete Mathematics	5	3	25	75	100	4
16UMA53P	Core Lab – IV: Visual Basic	3	3	20	30	50	2
	Elective – I :	6	3	25	75	100	4
Part – IV							
16UMA5SA	Skill based subject-III :Operations Research-III	3	3	20	55	75	3
16UMA53T	Industrial Training	Grade A to C					
		30				**600**	**24**
Sixth Semester							
Part – III							
16UMA63A	Core- XV: Complex Analysis	6	3	25	75	100	4
16UMA63B	Core -XVI: Java Programming	4	3	20	55	75	3
16UMA63P	Core Lab - V: Java Programming	4	3	20	30	50	2
	Elective -II :	6	3	25	75	100	4
	Elective -III :	6	3	25	75	100	4
Part – IV							
16UMA6SA	Skill based subject – IV: Quantitative Aptitude	4	3	20	55	75	3
Part – V							
16UEX65A	Extension Activity	-	3	-	50	50	2
		30				**550**	**22**
					Grand Total	**3500**	**140**

ELECTIVE – I

(Student shall select any one of the following subject as Elective-I in fifth semester)

S.No	Subject Code	Name of the Subject
1	15UMA5EA	Astronomy-I
2	15UMA5EB	Numerical Methods-I
3	15UMA5EC	RDBMS and Oracle

ELECTIVE - II

(Students shall select any one of the following subject as Elective-II in sixth semester)

S.No	Subject Code	Name of the Subject
1.	15UMA6EA	Astronomy-II
2.	15UMA6EB	Numerical Methods-II
3.	15UMA6EC	Digital Electronics and Computer Fundamentals

ELECTIVE - III

(Students shall select any one of the following subject as Elective-III in sixth semester)

S.No	Subject Code	Name of the Subject
1.	15UMA6ED	Automata Theory & Formal Languages
2.	15UMA6EE	Fuzzy Logic and Neural Networks
3.	15UMA6EF	Graph Theory

NON MAJOR ELECTIVE COURSES

- The Department offers the following two papers as Non Major Elective Courses for other than the mathematics related students.

- Student shall select any one of the following subject as Non Major Elective Courses during their III and IV semester

S.No	Semester	Subject Code	Name of the Subject
1.	III	16UNM34B	Mathematics for Competitive Examinations-I
2.	IV	16UNM44B	Mathematics for Competitive Examinations-II

FOR COURSE COMPLETION

Students have to complete the following subjects:

- Language papers (Tamil/Malayalam/French/Hindi, English) in I and II semester.
- Environmental Studies in I semester.
- Value Education in II and III semester respectively.
- General Awareness in IV semester.
- Allied papers in I, II, III and IV semesters.
- Non Major Elective Courses in III and IV semester.
- Elective papers in the fifth and sixth semesters.
- Extension activity in VI semester.
- Student has to complete the following industrial training :

  Subject code: 16UMA53T

  Student must undergo industrial training for 15-30 days during IV Semester summer vacation .Evaluation of the report done by the

internal and external examiner in the V semester. Based on their performance grade will be awarded as A to C

A- 75 marks and above

B- 60-74 marks

C-40-59 marks

Below 40 marks. – Reappear (RA)

Extra credits

Earning Extra credits is not mandatory for course completion

Part	Subject	Credit	Total credits
1.	BEC/ Self study courses	1	**1**
2.	Hindi / French/ Other foreign Language approved by certified Institutions	1	**1**
3.	Type Writing / Short Hand Course	1	**1**
4.	Diploma/certificate/CPT/ACS Inter/ NPTEL Course	1	**1**
5.	Representation – Academic/Sports /Social Activities/ Extra Curricular / Co-Curricular activities at University/ District/ State/ National/ International	1	**1**
Total			**5**

Rules:

The students can earn extra credit only if they complete the above during the course period (I to V sem) and based on the following criteria. Proof of Completion must be submitted in the beginning of VI Semester. (Earning Extra credits is not mandatory for Course completion)

1. Student can opt BEC course/ Self study course to earn one credit. They have to Enroll and complete any one of the course during their course period before fifth semester (I sem to V sem).

Self study paper offered by the Mathematics Department

S. No.	Semester	Course Code	Course Title
1.	Semester I to V	16UMASS1	VEDIC MATHS - I
2.		16UMASS2	VEDIC MATHS - II

2. Student can opt Hindi/ French/ Other foreign Language approved by certified Institutions to earn one credit. The certificate(Hindi) must be obtained from **Dakshina Bharat Hindi Prachar Sabha** and He/ she has to enroll and complete during their course period (**first to fifth semester)**
3. Student can opt for Type writing /short hand course to earn one credit extra. He/she has to enroll and complete the course during their course period to obtain certificate through **TamilNadu Board of Technical Education**
4. Student can opt for Diploma/certificate/CPT/ACS Inter/ NPTEL Course to earn one credit extra. Student who opt for Diploma/ Certificate course have to enroll any diploma/certificate course offered by Bharathiar University through our Institution. Student who opt for CPT/ ACS/CMA have to enroll and complete at foundation level during the course period. The course content of which shall be equivalent to that prescribed by ICAI/ICMA/ICSI. Students who opt for NPTEL course should complete certificate through NPTEL.
5. Award Winners in Academic/ Representation in Sports /Social Activities/ Extra Curricular/ Co-Curricular Activities at University/ District/ State/ National/ International level can earn one credit extra.

Total Credit Distribution

Subjects	Credits	Total		Credits	Cumulative Total
Part I: Tamil	4	2 X 100 =	200	08	16
Part II: English	4	2 X 100 =	200	08	
Part III:					
Core	4	12 X 100 =	1200	48	98
Core	3	4 X 75 =	300	12	
Elective	4	3 X 100 =	300	12	
Core Lab	2	5 X 50 =	250	10	
Allied Theory	4	4 X 100 =	400	16	
Part IV:					
Skill Based Subject	3	4 X 75 =	300	12	24
Basic Tamil/ advanced Tamil & others	2	2 X 50 =	100	04	
Value	2	1 X 50 =	50	02	
Environmental	2	1 X 50 =	50	02	
NMEC	2	2 X 50 =	100	04	
Part V:					
Extension Activity	2		50	02	02
Total			**3500**	**140**	**140**

16UMA13A	CORE –I: CLASSICAL ALGEBRA	SEMESTER – I

Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. On successful completion of this course the students should gain knowledge about the convergence of series.
2. Solving equations by various methods.

CONTENTS

UNIT-I

Binomial theorem - statements and proofs – summation of various series involving Binomial coefficients – Application of Binomial theorem to the summation of series – Approximate values.

UNIT-II

Exponential theorem – Statement and proof - summation of various series involving Exponential coefficients - Logarithmic series theorem- Modification of Logarithmic series – Euler's constant – summation of series.

UNIT- III

Convergency and divergency of series – general theorem – series of positive terms - comparison tests - Cauchy's condensation test- De Alembert's ratio list - Raabe's test.

UNIT- IV

Theory of equations: Roots of an equation- Relations connecting the roots and Coefficients- transformations of equations-character and position of roots-Descarte's rule of signs-symmetric function of roots-Reciprocal equations.

UNIT –V

Multiple roots-Rolle's theorem - position of real roots of f(x) =0 - Newton's method of approximation to a root - Horner's method.

TEXT BOOK :

1. *Manicavachagom Pillai, T.K. Natarajan,T. and Ganapathy,K.S*. 2015. **Algebra.** Viswanatham Printers & Publishers Private Ltd.

REFERENCE BOOK :

1. *Kandasamy,P and Thilagavathy, K.* 2004. **Mathematics Branch I – Vol.I.** S.Chand and Company Ltd. New Delhi.

16UMA13B	CORE- II: CALCULUS	SEMESTER - I

Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. On successful completion of this course the students should have gain the knowledge about the evolutes and envelopes
2. To know about the different types of integrations, its geometrical application, proper and improper integration.

CONTENTS

UNIT- I

Curvature-radius of curvature in Cartesian and polar forms-evolutes and envelopes- pedal equations- total differentiation- Euler's theorem on homogeneous functions.

UNIT–II

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

UNIT-III

Reduction formulae- problems- evaluation of double and triple integrals- applications to calculations of areas.

UNIT-IV

Jacobions - change of variables in double and triple integrals.

UNIT-V

Beta and Gamma integrals - their properties, relation between them- evaluation of multiple integrals using Beta and Gamma functions.

TEXT BOOK :

1. *Narayanan,S and Pillai, T.K.M.* 2009. **Calculus** volume 1and 2 **–** Viswanathan Publishers.

REFERENCE BOOKS :

1. *Bali N.P.* 1995. **Differential Calculus.** Laxmi Publisers, New Delhi.
2. *Bali N.P.* 2001. **Integral Calculus.** Laxmi Publisers, New Delhi.

16UMA1AA	ALLIED- I: STATISTICS- I	SEMESTER – I

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

1. On successful completion of the paper the students should have understood the concepts of probability and random variable.
2. To gain the knowledge about various discrete and continuous probability distributions.
3. To know about the concepts of correlation and regression.

CONTENTS

UNIT-I

Probability- Basic concept of probability and simple problems-Random variables- Discrete and continuous random variables –Distribution function-properties- Probability mass function, Probability density function-Mathematical expectation – Addition and multiplication theorems on expectations

UNIT- II

Moment generating function - Characteristic functions and their properties. Joint probability distributions-marginal and conditional probability distributions-Independence of random variables-transformation of variables (One & Two dimensional only) Chebychev's inequality, weak law of large numbers and central limit theorem.

UNIT-III

Discrete probability distributions: Binomial, Poisson and Normal distributions and their properties (MGF, Characteristic function, Additive properties, Mean & Variance and simple problems).

UNIT- IV

Exact probability distributions: Chi-square distribution- Student t distribution and F distribution their probability density functions and their properties. (MGF, Characteristic function, Additive properties).

UNIT-V

Curve fitting and principle of least squares: fitting of curves of straight line, second degree parabola, power curve and exponential curves-correlation and regression analysis.

TEXT BOOKS :

1. *Guptha, S.C and Kapoor, V.K.* 2007. **Fundamentals of Mathematical statistics.** S.Chand & co. New Delhi.

REFERENCE BOOKS :

1. *Guptha ,C.B and Vijay Guptha*. 2007. **Introduction to Statistical methods.** S.Chand & Co.New Delhi.
2. Sanchetti, *D*.C. Kapoor, V.K. 2010.**Statistics.** S.Chand & Co. New Delhi.
3. *Vittal.B.R.*2015.**Mathematical Statistics,** Margham Publication**.** Chennai.

16UMA23A	CORE- III: ANALYTICAL GEOMETRY	SEMESTER - II

Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. This course gives emphasis to enhance students' knowledge in two dimensional and three dimensional analytical geometry.
2. Conic sections in polar coordinates and the geometrical aspects of three dimensional figs, viz, sphere, cone and cylinder.

CONTENTS

UNIT-I

Analytical geometry of 2D - polar coordinates- Equation of a conic – directrix – chord - tangent-normal- simple problems - only in deriving equation of a conic.

UNIT-II

Analytical Geometry of 3D-straight lines - co planarity of straight-line-shortest distance (S.D) and equation of S.D between two lines-simple problems.

UNIT-III

Sphere: standard equation of sphere-results based on the properties of a sphere - tangent plane to a sphere - equation of a circle.

UNIT-IV

Cone and cylinder: Cone whose vertex is at the origin- envelope cone of a sphere-right circular cone-equation of a cylinder-right circular cylinder.

UNIT-V

Conicoides: Nature of a conicoide- standard equation of central conicoide –enveloping cone- tangent plane-condition for tangency –director Sphere-director plane.

TEXT BOOKS :

1. *Durai Pandian, P. Laxmi Durai Pandian and Mukilan,D*.2003 **Analytical Geometry.** S.Chand and Company.
2. *Manicavachagom Pillai, T.K.M. and Others*. 2006. **Analytical Geometry of 2D.** Visvanathan Publications

REFERENCE BOOKS:

1. *Bali, N.P*. 2005. **Solid Geometry.** Laxmi Publications (P) Ltd.
2. *Khanna, M.L*. 2005. **Solid Geometry.** Jainath & Co Publishers. Meerut.

16UMA23B	CORE –IV: MS OFFICE	SEMESTER - II

Total Credits: 4
Hours Per Week: 2

OBJECTIVES :

1. To enable students gain fundamental knowledge about the concepts of Operating systems and their applications.
2. To know about the Excel, Power point and Access tools.

CONTENTS

UNIT-I

MS office basics- Creating new document files – Saving Document files- Opening document files-working with document file properties – printing document files – controlling page setup in office programs – keyboard shortcuts.

UNIT-II

Word Basics – Using Auto text – Using Auto Correct Word editing technique – finding and replacing text – Checking spelling – using templates – formulating Formatting with styles creating tables.

UNIT-III

Excel Basics – entering data – selecting Range – Editing entries – formatting entries – Simple Calculation – naming cells and Ranges – Data display – Printing worksheets – Copying entries between workbooks – Moving sheets between workbook – deleting sheets – Creating graphs.

UNIT-IV

Power Point Basics – Working in outline view – using design templates – Merging presentations in Slider order view applying templates – adding graphs – adding organization charts.

UNIT-V

Access Basics – Creating a table – entering and adding records – Changing a structure – working with records – Creating forms – establish able relationship using queries to extract information.

TEXT BOOK :

1. *Sanjay Saxena*.2007. **MS Office 2000 for everyone.**

REFERENCE BOOKS :

1. *Bible*. 2007. **Microsoft Office 2007**. Wiley India.
2. *Stephen L. Nelson*. 2000. **The complete reference office 2000.** Tata McGraw Hill Publishers Private Ltd.

16UMA23P	CORE LAB - I: MS OFFICE	SEMESTER - II

Total Credits: 2
Hours Per Week: 3

CONTENTS

MS – WORD

1. Typing the text, check spelling and grammar bullets and numbering list items, align the text to left, right justify and centre.
2. Preparing a job application letter enclosing your Bio-Data.
3. Creating Lables and Performing Mail Merge Operation.

MS – EXCEL

4. Preparing Worksheet Using Formulae.
5. Creating electricity bill in a Worksheet.
6. Illustrating class performance by drawing graphs.

MS – ACCESS

7. Sorting techniques on students' database and printing the address using label format.
8. Preparing a Payroll report .
9. Screen designing for data entry.

MS – POWERPOINT

10. Preparing a PowerPoint presentation with at least three slides for department Inaugural function.
11. Drawing an organization chart with minimum three hierarchical levels.
12. Inserting an excel chart into a Power Point slide.

16UMA2AA	ALLIED –II: STATISTICS- II	SEMESTER - II

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

1. On successful completion of the paper the students should have understood the concepts of estimation.
2. To know about testing ,sampling and design of experiments.

CONTENTS

UNIT-I

Concept of population – sample – parameter and statistic - Sampling- Types of sampling: Purposive sampling, Random sampling, simple sampling, Stratified random sampling and systematic sampling- parametric and statistics- sampling distribution of a statistics- standard error- Sampling and non sampling errors.

UNIT-II

Theory of Estimation: point estimation – Interval estimation – Characteristics of Estimator: consistency, unbiasedness, efficiency- sufficiency-Most efficient estimator -Neymann factorization theorem- Cramer Rao inequality -Rao-Blackwell theorem.

UNIT-III

Methods of estimation - maximum likelihood, estimation, method of moments, method of minimum variance , method of least square – properties - Interval estimation – confidence interval-derivation of confidence intervals based normal, t, and chi-square and F.

UNIT- IV

Test of significance – procedure for testing of hypothesis - Tests of significance for large samples – Type-I and II errors – Test of significance-large sample test - Tests of significance for single and difference of mean – Mean, standard deviation, proportion, standard deviation and proportions.

UNIT-V

Small sample test: Goodness of fit χ^2 test – Tests of independence of attributes – Simple problem – t-test for single mean and difference of means – Paired t-test – Simple problems – F test for equality of two population variance – Simple problems.

TEXT BOOK :

1. *Guptha, S.C and Kapoor, V.K.* 2007. **Fundamentals of Mathematical statistics.** S.Chand & co.NewDelhi.

REFERENCE BOOKS :

1. *Vittal.P.R* 2015, Mathematical statistics , Margham Publications, Chennai.
2. *Kapur.J.M and Sexena.H.C.* 2001, Mathematical statistics, S.Chand & co.NewDelhi.
3. *D.C.Sancheti, V.K.Kapoor,* 2010,Statistics, S. chand & co.NewDelhi.
4. *R.S.N.Pillai, Bagavathi*, 2012, Statistics, S. chand & co.NewDelhi.

16UMA33A	CORE- V: TRIGONOMETRY, VECTOR CALCULUS AND FOURIER SERIES	SEMESTER - III

Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. On successful completion of this course the students should have gained knowledge about expansion of trigonometric functions,
2. To know about the concept of line integral, surface integral, volume integral and Fourier series.

CONTENTS

UNIT-I

Expansion of $\cos n\theta, \sin n\theta$ – hyperbolic functions - Separation of real and imaginary parts of $sin(\alpha+i\beta)$, $cos(\alpha+i\beta), tan(\alpha+i\beta)$, $sinh(\alpha+i\beta)$, $cosh(\alpha+i\beta), tanh(\alpha+i\beta), tan^{-1}(\alpha+i\beta)$.

UNIT-II

Logarithm of complex number - summation of trigonometric series.

UNIT-III

Scalar and vector point function , Level surfaces, Directional derivative of a scalar point function, Gradient - derivative of a scalar point function , summation notation– Differentiation of vectors-Differential operators-Laplacian differential operator –Directional derivative, Gradient, Divergence and Curl.

UNIT- IV

Integration of vectors – line integral – surface integral and Volume integrals – Green's theorem in the plane – Gauss divergence theorem – Strokes theorem (Statements only) –Simple problems.

UNIT-V

Fourier Series: Definition – Finding Fourier coefficients for a given periodic function with period 2π-Odd and even functions – Half range series .

TEXT BOOKS :

1. *Narayanan,S and Pillai, T.K.M*. 2009. **Trigonometry –**Viswanathan Publishers.
2. *Narayanan,S and Pillai, T.K.M*. 2009. **Fourier Series –**Viswanathan Publishers.
3. *Durai Pandian, P. Laxmi duraipandian and Mukilan,D*. 2003 **Vector Calculus.** S.Chand & Company Ltd., Ramnagar, New Delhi.

REFERENCE BOOK :

1. *Kandasamy,P. and Thilagavathi , K. 2003.* ***Mathematics*** **Volume IV** (Vector Calculus, Fourier Series) S.Chand & Company Ltd., Ramnagar, New Delhi.

16UMA33B	CORE- VI: STATICS	SEMESTER - III

Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. On successful completion of course the students should realize the concept about the forces, resultant force of more than one force acting on a surface, friction and center of gravity.
2. Also the students can differentiate static and dynamic forces.

CONTENTS

UNIT-I

Forces acting at a point – Parallelogram law-triangle law

UNIT-II

(λ, μ) theorem – Polygon law of forces-conditions of equilibrium.

UNIT-III

Parallel Forces-Moments and couples composition of parallel forces (like and unlike)

UNIT-IV

Moment of a force about a point-Varignons theorem – Equilibrium of three forces acting on a rigid body – Theorem on three co-planar forces in equilibrium

UNIT-V

Coplanar forces: Reduction of a system of co-planar forces in general.

TEXT BOOK :

1. *Venkataraman, M.K*. 1999. **Statics.** Agasthiar Publications, Trichy.

REFERENCE BOOK :

1. *Duraipandian,P. and Laxmi Duraipandian.* 1985. **Mechanics**. S.Chand and Company Ltd, Ram Nagar, New Delhi -55

15UMA33C	CORE – VII: PROGRAMMING IN C	SEMESTER - III

Total Credits: 3
Hours Per Week: 3

OBJECTIVES :

1. The students should have: Learnt the basic structure, operators and statements of c language.
2. They learnt the decision making statements and to solve the problems based on it.

CONTENTS

UNIT-I

Introduction – Importance of C - Basic structure of C program - Character set - Constants – Keywords and identifiers – Variables - Data types – Declaration of variables – Assigning values to variables –Defining symbolic constants.

UNIT-II

Arithmetic operators - Relational operators - logical operators – assignment operators –increment and decrement operators –Conditional operators – Special operators – Arithmetic expressions –Evaluation of expressions –Precedence of arithmetic operators – Some computational problems –Type conversion in expressions – operator precedence and associating mathematical functions.

UNIT-III

Reading and Writing character – formatted input and output. Decision making with IF statement – Simple IF statement – The IF ELSE statement - Nesting of IF…..ELSE statement – The ELSE IF ladder. The Switch statement –The ?: Operator –The GOTO statement.

UNIT-IV

The WHILE statement - the DO statement - FOR statement –Jumps in loops.

UNIT-V

One, Two dimensional arrays – Initiating two dimensional arrays – Multidimensional arrays –Declaring and initializing string variables – reading strings from terminal – Writing strings on the screen – Arithmetic operations on characters.

TEXT BOOK :

1. *Balagurusamy, E. 2007.* **Programming in ANSI C.** Second Edition. Tata McGraw – Hill Publishing company limited, New Delhi.

REFERENCE BOOK:

1. *Byron Gottfried*. 1998. **Programming with C**. Tata McGrawHill publishing company.

16UMA33P	CORE LAB – II: PROGRAMMING IN C	SEMESTER - III

Hours Per Week: 2
Total Credit :3

CONTENTS

1. Generating of n- Fibonacci number.
2. Solving Quadratic equations.
3. Calculating Measures of central tendency, Variance and Standard Deviation.
4. Sorting a set of numbers.
5. Sorting a set of names.
6. Finding a factorial value using recursive function call.
7. Finding the product of two matrices.
8. Programming to prepare a pay list.

16UCI3AB	ALLIED- III: BUSINESS ACCOUNTING – I	SEMESTER – III

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

To give a clear about the basic accounting vocabulary;

1. To analyze business transactions from an accounting viewpoint;
2. To recognize, record, and classify new accounting data.

CONTENTS

UNIT–I

Fundamentals of Book Keeping: Definition, objectives, methods of accounting, Branches of accounting, Types of Accounts and Accounting rules – Accounting Concepts and Conventions – Journal – Ledger – Subsidiary books: Purchases Book, Sales Book, Purchases Returns, Sales Return book, Cash Book (Single Column, Double Column and Triple Column) - Trial balance.

UNIT–II

Final accounts of a sole trader with adjustments: Trading Account, Profit and loss account, Balance Sheet, Adjustments

UNIT–III

Bill of exchange: Definition of bill of exchange, essentials of Bill of exchange, classification of bill of exchange, Accounting Treatment Of Bill Of Exchange (bill retained, bill discounted with bank, bill endorsed, bill sent for collection, renewal of bill, Accommodation bills) – Average Due Date: Meaning, determination of due date, types of problems (where amount is lent in different installments and where amount lent in single installment) – Account current: Meaning, Methods of Calculation of Interest : Interest table method, Product Method, Red Ink Interest Method, Epoque Method and varying interest rate method.

UNIT–IV

Accounting for consignments and Joint ventures: Consignment Meaning, definition, features, account sales, valuation of unsold stock, goods sent on consignment at cost price and invoice price, various commission to consignee (only Problem). Joint venture: Meaning, features, distinction between joint venture and partnership, joint venture and consignment, accounting treatment for joint venture: when keeping separate sets of books is kept and without keeping separate set of books(Only Theory).

UNIT–V

Cost accounting – Meaning - definition – Difference between cost accounting and financial accounting- Advantages and disadvantages-Element of cost - preparation cost sheet – stock levels-EOQ-Methods of pricing of stock issue-FIFO-LIFO Simple average method – weighted average method.

TEXT BOOKS :

1. *Vinayakam N., Mani P.L., and Nagarajan K.L*, 2003, **Principles of Accountancy** , S.Chand & Company Ltd., New Delhi
2. *Jain S P and Narang K L*, 2000, **Cost accounting**, Kalyani publishers, New Delhi

REFERENCE BOOKS :

1. *Gupta R.L., Gupta V.K. and Shukla M.C.,* 2006, **Financial Accounting**, Sultan chand & sons, New Delhi.
2. *Maheswari S.K., and Reddy T.S.,* 2005, **Advanced Accountancy**, Vikas publishers, New Delhi.

16UMA3SA	SKILL BASED SUBJECT- I: OPERATIONS RESEARCH - I	SEMESTER - III

Total Credits : 3
Hours Per Week: 4

OBJECTIVES :

1. On successful completion of this course students should have gained knowledge about optimal use of resources.
2. To know about the concept of the transportation Problems and Assignment Problems

CONTENTS

UNIT-I

Basics of O.R – Definition of O.R – Characteristics of O.R - Scientific methods in O.R – Necessary of O.R in Industry – O.R and Decision Making – Scope of O.R in Modern Management – Uses and limitations of O.R. Linear Programming Problem – Formulation of L.P.P – Graphical solutions of L.P.P – Problems.

UNIT- II

Simplex Method – Charnes Penality Method (or) Big – M Method - Two Phase Simplex method – Problems.

UNIT-III

Duality in L.P.P – Concept of duality – Duality and Simplex Method – Problems

UNIT-IV

The transportation Problems – Basic feasible solution by L.C.M – NWC-VAM optimum solutions – unbalanced Transportation problems

UNIT- V

The Assignment Problems – Assignment algorithm – optimum solutions – Unbalanced Assignment Problems-travelling salesman Problems.

TEXT BOOK :

1. *Kandiswarup, P. K. Gupta. and Man Mohan*.1998.**Operations Research**. S. Chand & Sons Education Publications, New Delhi.

REFERENCE BOOK :

1. *Prem Kumar Gupta and Hira,D.S. 1998*. **Operations Research.** S.Chand & Company Ltd. Ram Nagar, New Delhi.

16UMA43A	CORE – VIII: DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS	SEMESTER - IV

Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. End of this course, the students should gain the knowledge about the method of solving Differential Equations.
2. It also exposes Differential Equation as a powerful tool in solving problems in Physical and Social sciences.

CONTENTS

UNIT-I

Ordinary Differential Equations: Equations of First Order and of Degree Higher than one – Solvable for p, x, y – Clairaut's Equation – Simultaneous Differential Equations with constant coefficients of the form (i) $f_1(D)x + g_1(D)y = \varphi_1(t)$ (ii) $f_2(D)x + g_2(D)y = \varphi_2(t)$ where f_1 , g_1 , f_2 and g_2 are rational functions $D=d/dt$ with constant coefficients $\varphi_1(t)$ and $\varphi_2(t)$ explicit functions of t.

UNIT-II

Finding the solution of Second and Higher Order with constant coefficients with Right Hand Side is of the form Ve^{ax} where V is a function of x – Euler's Homogeneous Linear Differential Equations .

UNIT-III

Partial differential equations: Formation of equations by eliminating arbitrary constants and arbitrary functions – Solutions of Partial differential equations – Solutions of Partial Differential Equations by direct integration - Lagrange's Linear Equations.

UNIT-IV

Laplace Transforms: Definition – Laplace Transforms of standard functions – Linearity property – First Shifting Theorem – Transform of t $f(t)$, $f(t)/t$, $f'(t)$, $f''(t)$.

UNIT–V

Inverse Laplace Transforms – Applications to solutions of First Order and Second Order Differential Equations with constant coefficients.

TEXT BOOK :

1. *Kandasamy, P and Thilagavathi, K*.2004. **Mathematics for B.Sc – Branch – I Volume III**. S. Chand and Company Ltd, New Delhi.

REFERENCE BOOK :

1. *Narayanan,S. Manickavasagam Pillai*,T.K. 1991. **Calculus.** S. Viswanathan (Printers and Publishers) Pvt. Ltd, Chennai.

16UMA43B	CORE- IX: DYNAMICS	SEMESTER– IV

Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. End of this course, the student understands the reason for dynamic changes in the body.
2. To know about the concept of central orbits and Kinetic energy.

CONTENTS

UNIT-I

Projectiles: Path of a projectile-Greatest height-time of flight-range on an inclined plane through the point of projection-Maximum range.

UNIT-II

Motion under the action of central forces - velocity and acceleration in polar coordinates. Differential equation of central orbit – Pedal equations.

UNIT-III

Simple Harmonic Motion: Amplitude, periodic time -composition of two simple harmonic motions of the same period in a straight line and in two perpendicular lines.

UNIT-IV

Collision of Elastic bodies: Impact on a smooth sphere on a fixed plane – Direct impact of two smooth spheres- Loss of Kinetic energy due to direct impact of two smooth spheres.

UNIT-V

Oblique impact of two smooth spheres- Loss of Kinetic energy due to oblique impact of two smooth spheres.

TEXT BOOK :

1. *Venkataraman, M.K.*2002. **Dynamics.** 10th Edition. Agasthiar Publications. Trichy.

REFERENCES BOOKS :

1. *Dharamapadam , A.V*. 2011.**Dynamics.** S.Viswanathan Printers and Publishers Pvt., Ltd, Chennai.
2. *Vittal, P.R. Anantha Narayanan, v*. 2005, **Dynamics.** Margham Publications , Chennai.

15UMA43C	CORE -X: PROGRAMMING IN C++	SEMESTER - IV

Total Credits: 3
Hours Per Week: 3

OBJECTIVES :

1. The students should have learnt class structure, member functions & data members. Learnt the concept of inheritance, types and example problems.
2. They learnt the concepts of polymorphism, types and problems.

CONTENTS

UNIT-I

Evolution of C++ - applications of C++ - structure of C++ program. Tokens – keywords – identifiers and constants – basic data types – user-defined data types – constant pointers and pointers to constants – symbolic constants –type compatibility – declaration of variables – dynamic initialization of variables – reference variables – operators in C++ - scope resolution operator – memory management operators – manipulators – type cast operator – expressions and their types – special assignment expressions – implicit conversions – operator precedence.

UNIT-II

Functions in C++ : The main function – function prototyping – call by reference – return by reference – inline functions – default arguments – const arguments – function overloading. Managing Console I/O Operations: C++ streams – C++ stream classes – unformatted console I/O operations – formatted console I/O operations –managing output with manipulators.

UNIT-III

Classes and Objects: Specifying a class – defining member functions – making an outside function inline – nesting of member functions – private member functions – arrays within a class – memory allocation for objects –arrays of objects – objects as function arguments – friend functions – returning objects – const member functions. Constructors and Destructors: Introduction – constructors – parameterized constructors –

multiple constructors in a class – constructors with default arguments – copy constructor.

UNIT-IV

Operator Overloading: Introduction – defining operator overloading – overloading unary operators – overloading binary operators - overloading binary operators using friends – rules for overloading operators. Inheritance: Introduction – defining derived classes – single inheritance – making a private member inheritable – multilevel inheritance – multiple inheritance – hierarchical inheritance – hybrid inheritance.

UNIT-V

Working with Files: Introduction – Classes for File Stream Operations - Opening and Closing a File – Detecting End-of-file – More about open( ): File Modes – File Pointers and their Manipulations – Sequential Input and Output Operations – Updating a File: Random Access.

TEXT BOOKS :

1. *Balagurusamy, E.* 2003. **Object Oriented Programming with C++.** McGraw Hill- New Delhi.

REFERENCE BOOKS :

1. *Robert Lafore* . 2001. **Object Oriented Programming in Turbo C++.** Galgotia publications Pvt.Ltd, New Delhi- 110002 .
2. *Bjarne Stroustrup*. 2001. **The C++ programming language.** Pearson Education- New Delhi.

16UMA43P	CORE LAB-III: PROGRAMMING IN C++	SEMESTER - IV

Total Credits: 2
Hours Per Week: 3

1. Writing a function 'power( )'to raise a number 'm' to a power 'n'.

2. Writing a program to compute compound interest using function overloading .

3. Creating a class which consists of employee details, Deriving a class PAY from the above class and calculating DA, HRA and PF depending on the grade and display the pay slip in a neat format using console I/O.
4. Defining two classes POLAR and RECTANGLE to represent points in the polar and rectangle system. Writing a program to convert from one system to another.

5. Creating a class FLOAT that contains one float data member. Overload all the four arithmetic operators so that they operate on the objects of FLOAT.

6. Write a program to find the greatest of 5 numbers.

7. Write a program to display the student mark sheet

8. Write a program to calculate the EB bill using class and object.

16UCI4AB	ALLIED –IV: BUSINESS ACCOUNTING – II	SEMESTER - IV

Total Credits: 4
Hours Per Week: 6

Note: The question paper shall cover 20% theory and 80% problem

OBJECTIVES :

1. To know the various methods of depreciations and preparation of single entry accounts;
2. To introduce accounting methods for hire purchase system and branch accounts ;
3. To learn the preparation of various budgets and budgetary control;

CONTENTS

UNIT–I

Depreciation - Meaning- Features- Methods- Straight Line Method– Written Down Value Method - Annuity Method.

UNIT–II

Single Entry System – Meaning and Features –Limitations- Advantages- Statement of Affairs Method and Conversion Method.

UNIT–III

Branch Accounts - Introduction – Meaning – Objectives – Types of Branches - Dependent Branches – Features – Supply of Goods at Cost Price - Invoice Price – Branch Account in the books of Head Office - Debtors System Only (Excluding foreign branches).

UNIT–IV

Hire Purchase and Installment Systems- Accounting treatment– Calculation of interest –Default and repossession (Excluding Hire Purchase Trading Account)

UNIT–V

Budgeting- meaning and definition- advantages and disadvantages – production budget, sales budget, Cash budget, flexible budget.

TEXT BOOKS :

1. *Gupta R.L., Gupta V.K., and Shukla M.C.,* 2008, **Financial Accounting** –New Delhi, Sultan Chand & Sons.
2. *Dr. Maheswari S.N.*, 2004 , "**Management Accounting**", Sultan Chand & Sons, New Delhi.

REFERENCE BOOKS :

1. *Srinivasan and Ramachandran*, "**Management Accounting**", Sultan Chand & Sons Ltd, New Delhi.
2. *Jain S.P.,* 2010, **Principles of Accountancy** – Kalyani Publishers, New Delhi.

16UMA4SA	SKILL BASED SUBJECT- II: OPERATIONS RESEARCH - II	SEMESTER– IV

Total Credits: 3
Hours Per Week: 4

OBJECTIVES :

1. On successful completion of this course students should have gained knowledge about optimal use of resources.
2. To know about the concept of Queueing Theory

CONTENTS

UNIT- I

Game Theory – Two person zero sum game – The Maxmini – Minimax principle – problems - Solution of 2 x 2 rectangular Games – Domination Property – (2 x n) and (m x 2) graphical method – Problems.

UNIT-II

Queueing Theory – Introduction – Queueing system – Characteristics of Queueing system – symbols and Notation – Classifications of queues – Problems in (M/M/1) : (∞/FIFO); (M/M/1) : (N/FIFO); (M/M/C) : (∞/FIFO); (M/M/C) : (N/FIFO) Models.

UNIT-III

Inventory control – Types of inventories – Inventory costs – EOQ Problem with no shortages – Production problem with no shortages – EOQ with shortages – Production problem with shortages – EOQ with price breaks.

UNIT–IV

Replacement problem: Introduction – Replacement of equipment/ assets that deteriorates gradually – Replacement of equipment that fails suddenly and problems.

UNIT-V

Network scheduling by PERT / CPM – Introduction – Network and basic components – Rules of Network construction – Time calculation in Networks – CPM. PERT – PERT calculations .

TEXT BOOK :

1. *Kandiswarup, Gupta, P. K. and Man Mohan.*1995. **Operations Research.S**. Chand & Sons Education Publications. New Delhi. 12th Revised edition.

REFERENCE BOOK :

1. *Prem Kumar Gupta* 1995.**Operations Research.** S. Chand & Company Ltd, Ram Nagar, New Delhi.

16UMA53A	CORE – XI: REAL ANALYSIS	SEMESTER – V

Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. **T**he students should gain the knowledge about real and complex numbers, sets and metric space.
2. **T**he students should gain the knowledge about The Riemann - Stieltjes integral

UNIT-I

The Real and Complex Number System: Introduction -The field axioms – The order axioms – Geometric representation of real numbers – Intervals – Integers – The unique factorization theorem for integers – Rational numbers – Irrational numbers – Upper bounds, maximum element, least upper bound (supremum) – The completeness axiom – Some properties of the supremum; Properties of the integers deduced from the completeness axiom – The Archimedean property of the real number system – Rational numbers with finite decimal representation – Finite decimal approximation to real numbers – Infinite decimal representation of real numbers – Absolute values and the triangle inequality – The Cauchy-Schwarz inequality – Plus and minus infinity and the extended real number system R^* .

UNIT- II

Basic Notions of Set Theory: Introduction - Notations – Ordered pairs – Cartesian product of two sets – Relations and functions – Further terminology concerning functions – One-to-one functions and inverses – Composite functions – Sequences – Similar (equinumerous) sets – Finite and Infinite sets – Countable and Uncountable sets – Uncountability of the real number system – Set algebra – Countable collection of countable sets.

UNIT- III

Elements of point set topology: Introduction - Euclidean space R^n –Open balls and open sets in R^n - The structure of open sets in R^1 - Closed sets – Adherent points – Accumulation points – Closed sets and Adherent

points – The Bolzano – Weierstrass theorem – The Cantors intersection theorem.

UNIT-IV

Elements of point set topology: The Lindelof covering theorem – The Heine-Borel covering theorem – Compactness in R^n - Metric spaces – Point set topology in metric spaces – Compact subsets of a metric space – Boundary of a set.

UNIT-V

Limits and Continuity: Introduction - Convergent sequences in a metric space – Cauchy sequences – Complete metric spaces – Limit of a function – Limit of vector – valued functions – Continuous functions – Continuity of composite functions – Examples of continuous functions.

TEXT BOOK :

1. T. M. Apostol **, Mathematical Analysis**, Narosa Publishing Company, Second Editon. 2002.

   Chapter 1: Sections: 1.1 – 1.20

   Chapter 2: Sections: 2.1 – 2.15

   Chapter 3: Sections: 3.1 – 3.9

   Chapter 3: Sections: 3.10 – 3.16

   Chapter 4: Sections: 4.1 – 4.5, 4.7 – 4.9 , 4.11

REFERENCE BOOKS :

1. Walter Rudin, **Principles of Mathematical Analysis**, McGraw Hill, 1976.
2. Santhi Narayan and Dr. M. D. Raisinghania, **Elements of Real Analysis**, S. Chand & Company Pvt Ltd, New Delhi

15UMA53B	CORE – XII: MODERN ALGEBRA	SEMESTER – V

Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. The students should have concrete knowledge about the abstract thinking like sets, groups
2. To know about the concept of rings by proving theorems

CONTENTS

UNIT- I

Preliminary Notions: Set theory – Mappings – examples of mappings- The integers-Unique factorization theorem. **Groups Theory**: Definition of group- Some examples of groups- Some preliminary lemmas.

UNIT-II

Groups Theory: Subgroups – Cyclic subgroup – Lagrange's theorem- Index of a group – Order of an element –Euler theorem- Fermat theorem – A Counting Principle - Normal Subgroups and Quotient Groups.

UNIT-III

Groups Theory: Homomorphisms – Fundamental theorem of homomorphism of group- Cauchy's theorem for Abelian groups – Sylow's theorem for Abelian groups- Automorphisms – Inner automorphism - Cayley's theorem- Permutation groups.

UNIT-IV

Rings Theory: Definition and Examples of Rings–Some Special Classes of Rings – Commutative Ring – Field – Integral domain - Homomorphisms.

UNIT-V

Rings Theory: Ideals and Quotient Rings – More Ideals and Quotient Rings – Maximal ideal – The field of Quotients of an Integral Domain.

TEXT BOOKS :

1. Herstein, I.N.2003. **Topics in Algebra.** John Wiley & Sons, New York.

   Unit I Chapter 1 Sections 1.1 to 1.3, Chapter 2 Sections 2.1 to 2.3

   Unit II Chapter 2 Sections 2.4 to 2.6

   Unit III Chapter 2 Sections 2.7 to 2.10

   Unit IV Chapter 3 Sections 3.1 to 3.3

   Unit V Chapter 3 Sections 3.4 to 3.6.

REFERENCE BOOKS:

1. Surjeet Singh and Qazi Zameeruddin, **Modern Algebra.** Vikas Publishing House.1992.
2. Vasishtha, A.R, **Modern Algebra.** Krishna Prakashan Mandir, Meerut.1994-95.
3. S. Arumugam and A.T. Isaac, **Modern Algebra.** Scitech Publications (India) Pvt.Ltd
4. S.G.Venkatachalapathy, **Modern Algebra (For B.Sc Mathematics Major)**, Margham Publications,Chennai.

15UMA53C	CORE- XIII: VISUAL BASIC	SEMESTER – V

Total Credits: 3
Hours Per Week: 3

OBJECTIVES :

1. The students should have learnt about Object related concept.
2. They learnt the concepts of Data Files

CONTENTS

UNIT-I

Introduction to VB – Event and Event Procedure – Object related concept- VB program development process- components- VB environment – opening, saving and running a VB project- VB fundamentals- constants- variables- operators- library functions.

UNIT-II

Branching and looping- logical operators – If-then - If-then-Else -Select case- For Next, Do loop, While-Wend, Stop-VB control functions – Forms and controls.

UNIT-III

Menus and dialog boxes: Building Drop down menus, Accessing menu- sub menus- Popup menus- dialog boxes. Executing and debugging a new project- Errors-Error handlers.

UNIT-IV

Procedures: Modulus and procedures- sub procedures-Event procedures- Function procedures. Arrays : Characteristics-Declarations- Dynamic Arrays- Control arrays.

UNIT-V

Data Files: Characteristics-accessing and saving a file in VB –processing- Sequential Data file- Random access file-Binary files.

TEXT BOOKS :

1. *Byron S Gottfried*. 2002. **Visual Basic**. TMH Edition.

REFERENCE BOOK :

1. *Gary Cornell*. 2008. **Visual Basic 6**. Mc Graw Hill.

16UMA53D	CORE –XIV: DISCRETE MATHEMATICS	SEMESTER – V

Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. The students should gain knowledge about the Formal languages Automata Theory
2. To know about the concept of Lattices & Boolean Algebra and Graph Theory.

CONTENTS

UNIT-I

Mathematical logic: Negation – Conjunction – Disjunction – condition – Biconditional – Well formed formulas – Tautology - Equivalence of formulas - Duality law - Tautological implications - Normal forms - Predicates, Variables, Quantifiers - Free and bound Variables - Theory of inference for predicate calculus.

UNIT-II

Relations: Properties of binary relations in a set , relation matrix and the graph of a relation , equivalence relation , composition of binary relations. **Functions:** Definition and introduction , Composition of functions, Inverse functions.

UNIT-III

Grammar and Languages: Formal definition of a language , equivalence of finite state machine.

UNIT-IV

Lattices: Definition and examples – some properties of lattices – lattices and algebraic systems – Sub lattices , Direct product and Homomorphism – some special lattices. **Boolean algebra:** Definition and examples – Sub algebra , Direct product and Homomorphism – Boolean functions – minimization of Boolean functions.

UNIT-V

Graph Theory: Basic definitions , Paths, Reachability, Connectedness, Matrix representation of graphs – Trees.

TEXT BOOK :

1. *Tremblay, J.P and Manohar, R.P.1977.* ***Discrete*** **Mathematical Structures with applications to computer science**. Mc.Graw Hill.

16UMA53P	CORE LAB-IV: VISUAL BASIC	SEMESTER – V

Total Credits: 2
Hours Per Week: 3

CONTENTS

1. Displaying the current data and time using Library function
2. Using text box and command button, enter and display the
3. Programming to convert temperature from Fahrenheit to centigrade or vice-versa
4. Displaying the list using combo box.
5. Calculating factorial of a number.
6. Illustrating the usage of Timer control.
7. Illustrating the usage of scroll bars.
8. Writing a Program to illustrate the usage of Drop down menus.
9. Programming to illustrate the usage of menu enhancement.
10. Writing a Program to illustrate the usage of Pop-up menu.
11. Writing a Program to illustrate the usage of input boxes.
12. Finding the smallest number.
13. Finding the sine of angle.
14. Sorting the list of numbers.
15. Calculating deviations about an average.

15UMA5EA	ELECTIVE- I: ASTRONOMY – I	SEMESTER – V

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

1. The students should gain knowledge about Celestial sphere
2. The students should gain knowledge about Astronomy.

CONTENTS

UNIT-I

General description of the Solar system. Comets and meteorites – Spherical trigonometry.

UNIT-II

Celestial sphere – Pole – Equator – Zenith, nadir, meridian, Celestial co – ordinates – Diurnal motion and simple problems – Variation in length of the day – Representation of celestial objects on the celestial sphere.

UNIT-III

Dip of the horizon – perpetual day, duration of day – Latitude and Longitude – Night variations -Twilight – Geocentric parallex.

UNIT-IV

Refraction – aberration, heliocentric parallax definitions and formula - Tangent formula – Cassinis formula.

UNIT-V

Kepler's laws of planetary motion – motion of inferior and superior planets - Relation between true eccentric and mean anamolies.

TEXT BOOK:

1. *Kumaravelu and S. Susheela* .2005.**ASTRONOMY.** S.Chand and Company Ltd, Ram Nagar, New Delhi -55

15UMA5EB	ELECTIVE- I: NUMERICAL METHODS – I	SEMESTER – V

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

1. The student gains the knowledge about solving the linear equations numerically.
2. The student gains the knowledge about finding interpolation by using difference formulae.

CONTENTS

UNIT-I

The solution of numerical algebraic and transcendental Equations: Bisection method – Iteration Method – Convergence condition – Regula Falsi Method – Newton – Raphson method - Convergence Criteria – Order of Convergence.

UNIT-II

Solution of simultaneous linear algebraic equations: Gauss elimination method – Gauss Jordan method – Method of Triangularization – Crouts method – Gauss Jacobi method – Gauss Siedel method

UNIT-III

Finite Differences: Differences – operators – forward and backward difference tables – Differences of a polynomial – Factorial polynomial – Error propagation in difference table.

UNIT-IV

Interpolation (for equal intervals): Newton's forward and backward formulae – equidistant terms with one or more missing values – Central differences and central difference table – Gauss forward and backward formulae – Stirlings formula.

UNIT-V

Interpolation (for unequal intervals): Divided differences – Properties – Relations between divided differences and forward differences – Newton's divided differences formula – Lagrange's formula and inverse interpolation.

TEXT BOOKS :

1. *Kandasamy, P. Thilagavathi, K and Gunavathi, K.* 2007. **Numerical Methods**. S. Chand and Company Ltd, New Delhi.
2. *Balagurusamy, E.* 2012. **Numerical Methods**. Tata Mc.Graw Hill Publishing Co.Ltd. New Delhi.

REFERENCE BOOK :

1. *Venkataraman, M. K.* 1999. **Numerical Methods in Science and Engineering**. V Edition. National Publishing Company.

15UMA5EC	ELECTIVE- I: RDBMS AND ORACLE	SEMESTER – V

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

1. The students should have learnt the basic concepts of DBMS and RDBMS. Learn to build a queries using SQL, PL/SQL.
2. Learnt to design a forms and reports using ORACLE Developer 2000.

CONTENTS

UNIT-I

Basic concepts of DBMS – Entities and their attribute Keys – Primary Key, secondary key, Super Key, Candidate Key, Alternative Key - Examples, Relationship – Records and files, Data independence, Views – Types of Views, Components of a DBMS, DDL, DML, DQL. Advantages and disadvantages of DBMS, RDBMS –Relational Database – Relations and their schemes –Relation representation – Integrity rules.

UNIT-II

Integrative SQL –invoking SQL plus, data manipulation in DBMS ,The ORACLE data types, two dimension matrix creation, Intersection of data into tables, data constrains, computation in expression lists used to select data, logical operation, Range searching, pattern matching, Oracle function, Grouping data from tables in SQL , Manipulating dates on SQL, joins, sub queries.

UNIT-III

PL/SQL-Introduction, The PL/SQL execution environment, the PL/SQL syntax, Understanding the PL/SQL Block structure, database triggers.

UNIT-IV

Working with forms, Basic concepts, Application development in forms, Form module, Blocks items, Canvas view windows, Creating a form, Generating and running a form, Using the Layout editor, Master form,

Triggers, Data Navigation Via an Oracle form**,** Master detail form, Creating a master detail form, Master detail data entry screen.

UNIT-V

Working with reports ,Defining a data model for report , specify the layout of a report, use the Oracle reports interface, Creating a default tabular report, Creating computed columns, Creating user parameter, Arranging the layout, Creating a Master / Detail report, Creating a matrix report.

RDBMS AND ORACLE LAB :

1. Creating tables and writing simple queries using
   a. Comparison operators
   b**.** Logical Operators
   c. Set operators
   d. Sorting and Grouping
2. Writing Queries using built in functions
3. Creation of reports using column format
4. Updating and altering tables using SQL
5. Creation of students information table and writing PL/SQL blocks to find the total, average marks and results
6. Writing a PL/SQL block to prepare the electricity bill
7. Writing a PL/SQL to split the students information table in to two, one with the passed and other with failed
8. Writing PL/SQL block to join two tables, first table contains the Roll no. and address.
   Creating a Database Trigger to check the data validity of record.

TEXT BOOKS :

1. *BipinDesai*. For unit 1 treatment as in **"Introduction to Database System"** chapter1, sections 4.2 and 6.5.1 and 6.5.2
2. *Ivan Bayross.2000.* treatment as in **Commercial application Development using Oracle developer**. for units 2, 3, 4, 5

16UMA5SA	SKILL BASED SUBJECT –III: OPERATIONS RESEARCH - III	SEMESTER – V

Total Credits: 3
Hours Per Week: 3

OBJECTIVES :

1. To solve Integer Programming Problems, Non-linear Programming Problems and Dynamic Programming problems.
2. It also includes Markov Analysis and Decision Analysis.

CONTENTS

UNIT-I

Integer Programming Problem – Gomory's fractional cut Method – Branch and Bound Method.

UNIT-II

Non-linear Programming Problems – General NLPP – Lagrange multiplier – Hessian bordered Matrix – Kuhn Tucker Condition – Problems

UNIT-III

Dynamic Programming Problem – Recursive equation approach – D.P.P Algorithm – Solution of L.P.P by D.P.P.

UNIT-IV

Sequencing problem: Introduction – problem of sequencing – basic terms used in sequencing – processing n jobs through 2 machines – processing n jobs through k machines – processing of 2 jobs through k machines

UNIT-V

Decision Analysis – Decision making environment – Decisions under uncertainty – Decision under risk – Decision – Tree Analysis.

TEXT BOOK:

1. *Kandiswarup, Gupta. P. K.and Man Mohan*. 2007.**Operations Research** S. Chand & Sons Education Publications, New Delhi.

REFERENCE BOOK:

1. *Prem Kumar Gupta*, and Hira, D. S. 1995.**Operations Research**.S. Chand & Company Ltd, Ram Nagar, New Delhi.+

16UMA63A	CORE – XV: COMPLEX ANALYSIS	SEMESTER - VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

1. The students should gained knowledge about the origin, properties.
2. To know about the concept of application of complex numbers and complex functions.

CONTENTS

UNIT–I

Elementary and conformal mappings: Bilinear transformation – Special bilinear transformations – Circle and inverse points – Transformations $w = z^2, w = \sqrt{z}$, $w = e^z, w = \sin z \, and \; w = \cos z$ - conformal mappings – simple problems.

UNIT–II

Analytic functions: Complex functions - Limit of a function – continuity of a function – uniform continuity – differentiability and analyticity of a function – necessary conditions for differentiability – sufficient conditions for differentiability – C-R equation in polar coordinates – Simple problems.

UNIT-III

Complex Integration: Simple rectifiable oriented curves – integration of complex functions – simple integrals using definitions – definite integrals – interior and exterior of closed curve - Simply connected region – Cauchy's fundamental theorem – integral along an arc joining two points – simple problems.

UNIT–IV

Singularities: Singularity – Isolated singularity – Removable singularity – Essential singularity – Behaviour of a function at an isolated singularity – determination of nature of singularity – nature of singularity at infinity – simple problems.

UNIT-V

Residues: Residues – calculation of residues – real definite integral – simple problems.

TEXT BOOK :

1. *Durai Pandian and Laxmi Durai Pandian*. 2003. **Complex Analysis**. Emerald Publications.

   Unit I: Chapter 7 Sections 7.1 to 7.8

   Unit II: Chapter 4 Sections 4.1 to 4.8 and 4.10

   Unit III Chapter 8 Sections 8.1 to 8.8

   Unit IV Chapter 9 Sections 9.5 to 9.13

   Unit V Chapter 10 Sections 10.1 to 10.4

16UMA63B	CORE XVI: JAVA PROGRAMMING	SEMESTER - VI

Total Credits: 3
Hours Per Week: 4

OBJECTIVES:

1. The students should have: Learnt the basic Java programming concepts.
2. Learnt about wide range of Applications and Applets using Java.

CONTENTS

UNIT-I

Fundamentals of Object – Oriented Programming: Object – Oriented Paradigm – Basic concepts of object – oriented programming – Benefits of object – oriented programming – Application of object – oriented Programming. Java Evolution: History – Features – How Java differs from C and C++ - Java and Internet – Java and www – Web Browsers. Overview of Java: simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine.

UNIT-II

Constants, Variables, Data Types – Operators and Expressions – Decision Making and Branches: if, if .. else, nested if, switch, ? : Operator – Decision making and Looping : while, do, for – Jumps in Loops – Labeled Loops – Classes, Objects and Methods.

UNIT-III

Arrays, Strings and Vectors – Interfaces : Multiple Inheritance – Packages: putting classes together – Multithreaded programming.

UNIT-IV

Managing Errors and Exceptions – Applet Programming – Graphics Programming.

UNIT-V

Managing Input / Output Files in Java: Concepts of streams – stream classes – Byte stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading/Writing characters, Byte – Handling primitive data types – Random Access Files.

TEXT BOOK :

1. *Balagurusamy.E* Programming with Java – A Primer –*, 3rd Edition, TMH.*

REFERENCE BOOKS :

1. *Patrick Naughton & Hebert Schildt,* The Complete Reference Java 2 –, 3rd edition, TMH.
2. John R. Hubbard , Programming with Java –, 2nd Edition, TMH.

16UMA63P	CORE LAB-V: JAVA PROGRAMMING	SEMESTER - VI

Total Credits: 2
Hours Per Week: 4

CONTENTS

1. Write a Java program to printing the Pascal triangle.
2. Write a Java program to creating and displaying a message on the windows.
3. Write a Java program to drawing several shapes in the created window.
4. Write a Java program to find odd or even numbers among n numbers.
5. Write a Java program to calculate standard deviation.
6. Write java applications to extract a portion of a character string and print the extracted string.
7. Write a Java program to implement the concept of multiple inheritance
   using interfaces.
8. Write a Java program to implement the concept of multithreading.
9. To create a Java program to create a frame with four text field such as
   name, street ,city , and pin code with suitable table with one button.
10. Write a Java program for exception handling.

15UMA6EA	ELECTIVE- II: ASTRONOMY - II	SEMESTER - VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

1. The students should gain knowledge about Annual Parallax.
2. The students should gain knowledge about Astronomy.

CONTENTS

UNIT-I

Time: Equation of time – Siderial Time - Convertion of time – Local Mean Time – Mean Siderial Time - Seasons – Calendar.

UNIT-II

Annual Parallax – Abberation – Direct and Retrograde motion – Stationary points.

UNIT-III

Precession – Precession of the equinoxes on different kinds of years - Nutation.

UNIT-IV

The Moon – Phases of the moon – Eclipses, Ecliptic Limits – Number of Eclipses in a year.

UNIT-V

Planetory Phenomenon – Stellar Universe - The Stellar system – Constellations – Galaxy , Cluster, Nebula – Transit circle.

TEXT BOOK :

1. *Kumaravelu and Susheela Kumaravelu,S.* 2007. **ASTRONOMY**. S.Chand and Company Ltd, New Delhi.

15UMA6EB	ELECTIVE- II: NUMERICAL METHODS – II	SEMESTER - VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

1. The student gain the knowledge about solving the linear equations numerically
2. To find interpolation by using difference formulae.

CONTENTS

UNIT-I

Numerical differentiations: Newton's forward and backward formulae to compute the derivatives – Derivative using Stirlings formulae – to find maxima and minima of the function given the tabular values.

UNIT-II

Numerical Integration: Newton – Cote's formula – Trapezoidal rule – Simpson's 1/3rd and 3/8th rules – Gaussian quadrature – two points and three points formulae

UNIT-III

Difference Equation: Order and degree of a difference equation – solving homogeneous and non – homogeneous linear difference equations.

UNIT-IV

Taylor series method – Euler's method – improved and modified Euler method – Runge Kutta method(fourth order Runge Kutta method only)

UNIT-V

Numerical solution of O.D.E(for first order only): Milne's predictor corrector formulae – Adam-Bashforth predictor corrector formulae – solution of ordinary differential equations by finite difference method (for second order O.D.E).

TEXT BOOK:

1. *Kandasamy, P. Thilagavathi, and K .Gunavathi, K.*2007.**Numerical Methods**. S. Chand and Company Ltd, New Delhi.

REFERENCES BOOKS:

1. *Venkataraman, M. K.1999.***Numerical Methods in Science and Engineering.** National Publishing Company.
2. *Sankara Rao, K.*2004 .**Numerical Methods for Scientists and Engineers.** 2nd Edition Prentice Hall India .

15UMA6EC	ELECTIVE- II: DIGITAL ELECTRONICS AND COMPUTER FUNDAMENTALS	SEMESTER - VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

1. The student gains the knowledge about digital electronics.
2. To know about the circuits.

CONTENTS

UNIT-I

Representation of information Number System and Codes – Binary to Decimal Conversion - Decimal to Binary Conversion – Octal Numbers – Hexadecimal Numbers – ASCII Code – Excess-3 Code – Gray Code

UNIT-II

Logic circuits: Gates – AND, OR, NOT, NAND and NOR gates – Truth tables – Boolean Algebra – Karnaugh Maps – Product of sum and Sum of product methods – Don't care conditions – Multiplexers and Demultiplexers – Flip flops – RS, JK, D, T flip flops – Decoders.

UNIT-III

Shift Registers – Counters – Arithmetic circuits – Half adder – Full Adder – Half & fullSubtractor – Binary adder &Subtractor – Serial & Parallel Binary Adders – BCD Adder.

UNIT-IV

I/O devices: Punched tape – Tape readers – Alphanumeric codes – Character recognition – CRT – Output Device : Magnetic tape Output offline Operation – Error detecting and correcting codes – Printers: Dot Matrix, Laser, CRT, Keyboards – Terminals.

UNIT-V

Semiconductor Memories: ROM – RAM – Static RAM, Dynamic RAM – Magnetic disc memories – Magnetic tape – Digital recording techniques

TEXT BOOKS :

1. *Albert Malvino and Donald P Leach.* 2003. **Digital Principles and Applications** .
2. *Bartee,* T.C . 2007.**Digital Computer fundamentals** .

15UMA6ED	ELECTIVE- III: AUTOMATA THEORY AND FORMAL LANGUAGES	SEMESTER-VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

1. The student gain the knowledge about formal languages.
2. To know about automata

CONTENTS

UNIT-I

Introduction – Phrase Structure Grammar (PSG) – Phrase Structure Languages – Context Sensitive Grammar – Context Sensitive Language – Context Free Grammar – Context Free Language – Regular Grammar – Regular Language.

UNIT-II

Closure Operations – Union – Product or Concatenation – Star – Reflection – Substitution – Homomorphism – Intersection – Simple theorems.

UNIT-III

Context free languages – generation tree – ambiguity- auxiliary lemmas – Chomsky normal form.- Greibach normal form – UV theorem – self embedding property.

UNIT-IV

Finite state automata – Deterministic finite state automata – non Deterministic finite state automata – Rabin and Scott theorem – Chomsky and Miller theorem – Closure property – Characterization of the family of regular sets – Kleene theorem.

UNIT-V

Push down automata – Introduction – Informal description – formal definitions – notations – empty store – characterization – Deterministic Push down automata – simple theorems.

TEXT BOOK :

1. *Rani Siromoney* .1984. **Formal Languages and Automata** .The Christian Literary Society, Madras-3 Chapters 1 to 6.

15UMA6EE	ELECTIVE –III: FUZZY LOGIC AND NEURAL NETWORKS	SEMESTER - VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES :

1. To introduce the concept of soft computing to the students, to take up research projects in these areas
2. To enable the students to apply the soft computing methodologies in their fields of Work

CONTENTS

UNIT-I

Fuzzy set theory: Fuzzy versus crisp- Crisp sets: Operations on crisp sets – Properties of crisp sets – Partition and covering .Fuzzy sets: Membership function basic fuzzy set operations – Properties of fuzzy sets. Crisp relations: Cartesian product – Other crisp relations – Operations on fuzzy relations. Fuzzy relations: Fuzzy Cartesian product – Operations on fuzzy relations.

UNIT-II

Fuzzy systems: Crisp Logic: Laws of prepositional Logic- Inference in prepositional Logic. Predicate Logic : Interpretations of Predicate Logic formula – Inference in predicate Logic . Fuzzy logic : Fuzzy Quantifiers – Fuzzy inference – Fuzzy rule based System – Defuzzification Methods – Applications.

UNIT-III

Fuzzy Associative Memories : FAM an introduction – Single Association FAM: Graphical method of inference – Correlation Matrix Encoding . Fuzzy Hebb FAMS- FAM involving a rule base – FAM Rules with multiple Antecedents / Consequents: Decomposition rules. Applications.

UNIT-IV

Fundamentals Of Neural Network: Basic Concepts of Neural Networks – Human Brain – Model of an Artificial Neuron – Neural Network

Architectures: Single Layer Feed Forward Network – Mutlilayer Feed forward Network – Recurrent Networks .Characteristic of neural Networks – Learning Methods – Taxonomy of neural Network Architectures – History of neural Network Research – Early neural Network Architectures – Rosenblatt's percetron – ADALINE network – MADALINE Network – Some Application Domains.

UNIT-V

Back Propagation Networks: Architecture of a Back Propagation Network: The Perceptron Model – The solution – Single Layer Artificial Neural Network. Model for Multi Perceptron .Bank Propogation Learning : Input Layer computation – Hidden Layer Computation Output Layer Computation –Calculation of Error – Training of neural network – Method of steepest Descent – Effect of learning Rate - Adding a Momentum Term – Back Propogation Algorithm.

TEXT BOOK :

1. *Rajasekaran,S and Vijayalakshmi Pai, G.A.*2003.**Neural Networks, Fuzzy Logic and Genetic Algorithms – Synthethesis and Applications** . Prentice Hall of India Pvt. Ltd., New Delhi.

REFERENCE BOOK :

1. *Timothy and Ross,J.* 1997. F**uzzy Logic with Engineering Applications** , McGrow Hill .

15UMA6EF	ELECTIVE –III: GRAPH THEORY	SEMESTER - VI

Total Credits:4
Hours Per Week: 6

OBJECTIVES :

1. The students should gain knowledge about Graphs.
2. The students should know about Tournaments.

CONTENTS

UNIT-I

Graphs –Sub graphs – Degree of a vertex walks, paths and cycles in a Graphs – connectedness cut vertex and cut edge.

UNIT-II

Eulerian and Hamiltonion Graphs – Algorithm for Eulerian circuits – Bipartite Graphs – Trees.

UNIT-III

Matrix representation of a graph – vector spaces, associated with a graph – cycle spaces and act set spaces.

UNIT-IV

Planar graphs – Euler's theorem on planar graphs – characterization of planar graphs (no proofs) of the difficult part of the characterization.

UNIT-V

Directed graphs – Connectivity – Enteoriom Digraphs – Tournaments.

TEXT BOOK :

1. *Chandran, A.*1993. **A First Course in Graph Theory** (Macmillan)

16UMA6SA	SKILL BASED SUBJECT –IV: QUANTITATIVE APTITUDE	SEMESTER - VI

Total Credits: 3
Hours Per Week:4

OBJECTIVES :

1. To enable students gain fundamental knowledge about the Mathematical skills
2. To explain the extent of the application of analytical skills.

CONTENTS

UNIT-I

Numbers – Operations on Numbers – Face Value and Place value of a digit in a numeral-Various types of numbers – Even and Odd numbers - Prime Numbers – Composite Numbers - Tests of divisibility- H.C.F. and L.C.M. of numbers– Fractions – Arithmetic Operations on Fractions.

UNIT-II

Problems on Ages – Simple problems involving ages – Date sufficiency questions – Percentage – Introduction of formulae – Concept of percentage – Increase and decrease in percentage - results on population – results on depreciation.

UNIT-III

Profit and Loss–Cost Price – Selling Price – Profit or Gain – Loss – Profit Percentage – Loss Percentage - Ratio and Proportion– Comparison of Ratios – Compounded Ratio – Duplicate Ratio – Sub-duplicate Ratio - Triplicate Ratio - Sub-triplicate Ratio - Variation.

UNIT-IV

Time and Work – Time and distance, pipes and cisterns.

UNIT-V

Simple Interest-Compound Interest-Mensuration.

TEXT BOOK :

1. *Agarwal, R.S.* 1990. **Quantitative Aptitude.** Revised Edition. S.Chand and Company Ltd, Ram Nagar, New Delhi -55

REFERENCE BOOK :

1. *Abhijit Guha*. 2004. **Quantitative Techniques**. S.Chand and Company Ltd, Ram Nagar, New Delhi -55

16UNM34B	NMEC–I :MATHEMATICS FOR COMPETITIVE EXAMINATIONS - I	SEMESTER – III

Total Credits: 2
Hours Per Week:2

OBJECTIVES :

1. To enable students gain fundamental knowledge about the Mathematical skills
2. To explain the extent of the application of analytical skills.

CONTENTS

UNIT-I

Numbers – Average – Problems on numbers.

UNIT-II

Clocks – Probability – Heights and Distances.

UNIT-III

Odd man out and Series – Allegation or Mixture – Problems on ages.

UNIT-IV

Coding and decoding – cubes and dices – Ranking and Ordering.

UNIT-V

Puzzles – Diagram related problems.

TEXT BOOKS :

1. *Agarwal, R.S.* 2009. **Quantitative Aptitude.** Revised Edition. S. Chand and Company Ltd, New Delhi.
2. *Praveen, R.V.* 2013. **Quantitative Aptitude and Reasoning.** PHI learning Pvt Ltd, New Delhi.

16UNM44B	NMEC-II: MATHEMATICS FOR COMPETITIVE EXAMINATIONS - II	SEMESTER– IV

Total Credits: 2
Hours Per Week: 2

OBJECTIVES :

1. To enable students gain fundamental knowledge about the Mathematical skills
2. To explain the extent of the application of analytical skills.

CONTENTS

UNIT-I

Problems on Trains – Speed – Distance – Time – Conversion between Kilometer and Meter – Average Speed - Boats and streams – Same Directions – Opposite Directions.

UNIT-II

Simple Interest – Principal – Interest – Number of Years – Rate of Interest - Amount. Compound Interest – Principal – Interest – Number of years – Rate of Interest – Annual – Quarterly – Half yearly – Present Worth – Different Rate of Interest for Years – Difference between Compound Interest and Simple Interest.

UNIT-III

Area – Fundamental Concepts – Formulae - Square, Rectangle, Sphere, Cone, Cylinder and Circle – Applications and Solving Problems.

UNIT-IV

Volume and Surface Areas – Fundamental Concepts – Formulae – Cube, Cuboids, Sphere, Semi Sphere, Cone and Cylinder.

UNIT-V

Calendar - Calendar – Odd Days – Leap year – Ordinary Year – Counting of odd days – Days of the week related to odd days - Permutations and

Combinations – Factorial Notation – Permutations – Number of Permutations – Number of Combinations.

TEXT BOOK :

1. *Agarwal , R.S.1996*.**Quantitative Aptitude.** S. Chand and Company Ltd, New Delhi.

REFERENCE BOOK :

1. *Abhijit Guha*. 2004.**Quantitative Techniques**. S. Chand and Company Ltd, New Delhi.

16UMASS1	SELF STUDY PAPER – I: VEDIC MATHS - 1	Semester: I to V

Total Credits:1

UNIT-I

Simple techniques :
Subtraction from 100/1000/10000 - Normal method - Vedic method - Multiplication with a series of 9s.

UNIT-II

Remainder on dividing a number by 9
Basic method - First enhancement - Second enhancement – Verification of the product of two numbers, sum of two numbers.

UNIT-III

Operations with 11
Multiplication – Divisibility Test of numbers by 11 – Multiplication with 11

UNIT–IV

Multiplication (Nikhilam)
Secondary Bases of 50 – Secondary Bases of 500

UNIT–V

(Multiplication (Urdha Tiryak)
2-Digit Multiplication - 3-Digit Multiplication

TEXT BOOK :

1. Atul Cupta, The Power of Vedic maths, 2005, Jaico Publishing House Mumbai.

16UMASS2	SELF STUDY PAPER – II: VEDIC MATHS - II	SEMESTER: I to V

Total Credits:1

UNIT–I

Division

Division by a flag of one digit (no remainder) - Division by a flag of one digit (with remainder).

UNIT-II

Simple Squares

Numbers ending with 5 – Two numbers starting with same digit and ending digits adding upto 10

UNIT–III

Square of any number

Definition – Dwandwa or Duplex – Square of any Number

UNIT–IV

Square root of a number - Steps – Perfect square root

UNIT–V

Cubes and Cube Roots

Computing cubes of 2 digits numbers – Cube roots of 2 digit numbers

TEXT BOOK :

1. Atul Cupta, The Power of Vedic maths, 2005, Jaico Publishing House Mumbai.

7/6/2016

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