GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS) KUMBAKONAM

DEPARTMENT OF MATHEMATICS

Programme : B.Sc., Mathematics

Programme Code : USMA

SYLLABUS

2023 – 2024 – I YEAR

2024 – 2025 – II YEAR

2025 – 2026 – III YEAR

Programme Outcomes:

PO1: Disciplinary Knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.

PO2: Critical Thinking: Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development.

PO3: Problem Solving: Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, rather than replicate curriculum content knowledge; and apply one's earning to real life situations.

PO4: Analytical Reasoning: Ability to evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples and addressing opposing viewpoints.

PO5: Scientific Reasoning: Ability to analyse, interpret and draw conclusions from quantitative / qualitative data; and critically evaluate ideas, evidence, and experiences from an open minded and reasoned perspective.

PO6: Self-directed & Lifelong Learning: Ability to work independently, identify and manage a project. Ability to acquire knowledge and skills, including "learning how to learn", through self-placed and self-directed learning aimed at personal development, meeting economic, social and cultural objectives.

Programme Specific Outcomes:

PSO1: Acquire good knowledge and understanding, to solve specific theoretical & applied problems in different area of mathematics & statistics.

PSO2: Understand, formulate, develop mathematical arguments, logically and use quantitative models to address issues arising in social sciences, business and other context /fields.

PSO3: To prepare the students who will demonstrate respectful engagement with other's ideas, behaviors, beliefs and apply diverse frames of references to decisions and actions. To create effective entrepreneurs by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations.

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs) and Programme Specific Outcomes (PSOs)can be carried out accordingly, assigning the appropriate level in the grids:

	POs							PSOs		
	1	2	3	4	5	6	…	1	2	…
CLO1										
CLO2										
CLO3										
CLO4										
CLO5										

GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS) KUMBAKONAM
(Common course structure – B.Sc., – 2023 - 2024)
Department : Mathematics   Programme Code: USMC

SEMESTER – I

Part	Course Type	Course Code	Title of the Course	Hrs/ Week	Credits
I	LC – I	U231T1	Tamil	6	3
II	ELC - I	U231E1	General English - I	6	3
III	CC – I	U23MC101	Algebra and Trigonometry	4	4
	CC – II	U23MC102	Differential Calculus	4	4
	GEC – I	U23CHGE4	Chemistry For Physical Sciences I	4	3
	GEC – II	U23CHGE3P	Volumetric analysis - Practical	2	2
IV	VE	U231VE	Value Education	2	2
IV	FC	U23M1FC	Fundamentals of Mathematics	2	2
			Total	**30**	**23**

SEMESTER – II

Part	Course Type	Course Code	Title of the Course	Hrs/ Week	Credits
I	LC – II	U232T2	Tamil	6	3
II	ELC – II	U232E2	General English - II	6	3
III	CC – III	U23MC203	Integral Calculus	4	4
	CC - IV	U23MC204	Analytical Geometry (Two & Three Dimensions)	4	4
	GEC -III	U23CHGE5	Chemistry For Physical Sciences II	4	3
	GEC- IV	U23CHGE6P	Systematic Analysis of Organic Compounds - Practical	2	2
IV	SEC - I	U23M2SE1	Mathematics for Competitive Examinations -I	2	2
IV	EVS	U232ES	Environmental Studies	2	2
			Total	**30**	**23**

SEMESTER – III

Part	Course Type	Title of the Course	Hrs/ Week	Credits
I	LC – III	Tamil	6	3
II	ELC - III	English	6	3
III	CC – V	Sequences and Series	5	5
III	CC – VI	Mathematical Statistics	4	4
III	GEC – IV		4	3
III	GEC – V		2	2
IV	SEC - II	Basics and Techniques in Spread Sheet - Practical	1	1
IV	SEC - III	Mathematics for Competitive Examinations - II	2	2
		Total	**30**	**23**

SEMESTER – IV

Part	Course Type	Title of the Course	Hrs/ Week	Credits
I	LC – IV	Tamil	6	3
II	ELC - IV	English	6	3
III	CC – VII	Differential Equations and Applications	4	4
III	CC – VIII	Mathematical Statistics using SPSS - Practical	4	2
III	GEC – VI		4	3
III	G EC – VII		2	2
IV	SEC – IV	Computing skills (Office Automation)	2	2
IV	SEC - V	Mathematics for Competitive Examinations - III	2	2
		Total	**30**	**21**
		Internship/Industrial training*	-	-

*Internship/industrial training during summer vacation. The credits shall be awarded in Semester V statement of marks.

SEMESTER – V

Part	Course Type	Title of the Course	Hrs/ Week	Credits
III	CC – IX	Abstract Algebra	6	5
III	CC – X	Real Analysis	6	4
III	CC – XI	Statics	5	4
III	CC – XII	Core/ Project Viva- Voce	3	3
III	DSE – I	1. 2.	4	2
III	DSE – II	1. 2.	4	3
IV	SEC – VI	Introduction to Scientific Computing (MATLAB) – Practical	2	2
IV	AEC - I	Internship/Industrial training	-	2
		Total	**30**	**25**

SEMESTER – VI

Part	Course Type	Title of the Course	Hrs/ Week	Credits
III	CC – XIII	Linear Algebra	6	5
III	CC – XIV	Complex Analysis	5	4
III	CC - XV	Dynamics	5	4
III	DSE – III	1. 2.	5	3
III	DSE - IV	1. 2.	4	3
IV	SEC – VII	Statistics with R Programming (Practical)	2	2
IV	AEC - II	Professional competency skill – General awareness for Recruitment Board of Examinations	2	2
IV	GS	Gender studies	1	1
	EA	Extension Activity	-	1
		Total	**30**	**25**

TOTAL CORE COURSES   : 15
TOTAL ELECTIVE COURSES: 8
TOTAL HOURS: 180
TOTAL CREDITS: 140

COURSES OFFERED BY THE DEPARTMENT OF MATHEMATICS

Part	Course Type	Course Code	Title of the Course	Hrs/ Week	Credits	Exam Hrs	Marks		
							CIA	ESE	Total
III	ALLIED COURSE FOR PHYSICS AND CHEMSITRY	GEC - I	1. Calculus and Fourier Series 2. Algebra, ODE and Trigonometry 3. Probability and Statistics	6	5	3	25	75	100
III	ALLIED COURSE FOR PHYSICS AND CHEMSITRY	GEC - II	1 Laplace Transforms and Vector Calculus 2. .Numerical Methods 3. Operations Research	6	5	3	25	75	100
III	ALLIED COURSE FOR COMPUTER SCIENCE	GEC - I	1.Numerical Methods 2.Probability and Statistics 3.Calculus and Fourier Series	6	5	3	25	75	100
III	ALLIED COURSE FOR COMPUTER SCIENCE	GEC - II	1.Operations Research 2.Discrete Mathematics 3. Laplace Transforms and Vector Calculus	6	5	3	25	75	100

<div align="center">

CC - I ALGEBRA AND TRIGONOMETRY

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Theory Hours: 4	**Course Code: U23MC101**
Practical Hours : -	**Credits: 4**
Exam Hours : 3	**Internal: 25**
	External: 75

Objectives:

- Basic ideas on the Theory of Equations, Matrices and Number Theory.
- Knowledge to find expansions of trigonometry functions, solve theoretical and applied problems.

Unit I: Theory of equations - Relations between roots and coefficients – Sum of the powers of the roots – Newton's theorem - Reciprocal Equations – Transformation of Equations – Multiple roots - Cubic Equations solution by Cardon's method – Biquadratic Equations – solution by Ferrari's method, Horner's method.

Unit II: Summation of Series: Binomial– Exponential –Logarithmic series (Theorems without proof) – Approximations - related problems only.

Unit III: Characteristic equation – Eigen values and Eigen Vectors-Similar matrices - Cayley – Hamilton Theorem (Statement only) - Inverse of a square matrix up to order 3, Rank of matrix- related problems only.

Unit IV: Expansions of $\sin n\theta$, $\cos n\theta$ in powers of $\sin\theta$, $\cos\theta$ - Expansion of $\tan n\theta$ in terms of $\tan\theta$, Expansions of $\cos^n\theta$, $\sin^n\theta$, $\cos^m\theta\sin^n\theta$ – Expansions of $\tan(\theta_1+\theta_2+,\ldots,+\theta_n)$ - Expansions of $\sin\theta$, $\cos\theta$ and $\tan\theta$ in terms of θ - related problemsonly.

Unit V: Hyperbolic functions – Relation between circular and hyperbolic functions Inverse hyperbolic functions, Logarithm of complex quantities - related problems only

TEXT BOOKS:
1. T K Manicavachagom Pillay and others, Algebra Volume I, S.V. Publications- Reprint - 2013.
2. S. Arumugam and Issac A.T, Modern Algebra, SCITECH Publications (India) PVT.LTD
3. S. Arumugam and Issac Somasundaram, Trigonometry and Fourier series, New Gamma Publishing, 1999.

REFERENCE(S):
1. Kandasamy P and K. Thilagavathi – Mathematics for B.Sc., - 2004, Vol I and Vol IV., S.Chand and Co., New Delhi.
2. T K Manicavachagom Pillay and S. Narayanan – Algebra – Viswanathan Publishers and Printers Pvt. Ltd., - 2004.
3. S. Arumugam and Thangapandi Issac, - Classical Algebra, New Gamma Publishing House, Palayamkottai.
4. C. V. Durell and A. Robson, Advanced Trigonometry, Courier Corporation, 2003
5. J. Stewart, L. Redlin, and S. Watson, Algebra and Trigonometry, Cengage Learning, 2012.

UNIT   I : Chapter 6 (sections 1, 11, 13, 14, 15, 16) and
(sections 26,30,33,34,34.1,35) of [1]
UNIT   II : Chapter 5 (sections 1 to 5) of [1], Chapter 3
(section1) of [1]
Chapter 4 (sections 1 to 7) of [3]
UNIT   III : Chapter 7   (sections 7.3, 7.5, 7.7 and 7.8) of [2]
UNIT   IV : Chapter 1 (sections 1.2 - 1.4) of [3]
UNIT   V : Chapter 2 (sections 2.1 and 2.2), Chapter 3 of [3]

COURSE OUTCOMES (for Mapping with POs and PSOs)

Students will be able to

CLO 1: Classify and Solve reciprocal equations.
CLO 2: Find the sum of binomial, exponential and logarithmic series.
CLO3: Find Eigen values, eigen vectors, verify Cayley – Hamilton theorem and diagonalizable a given matrix
CLO 4: Expand the powers and multiples of trigonometric functions in terms of sine and cosine
CLO 5: Determine relationship between circular and hyperbolic functions and Logarithm of complex quantities.

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	√	√	√	-	-	√	√	√	√
CLO2	√	√	√	√	-	-	√	√	√
CLO3	√	√	√	√	-	√	√	√	√
CLO4	√	√	√	-	√	-	√	√	√
CLO5	√	√	√	-	-	-	√	√	√

Question Paper Pattern

SECTION A : $10 \times 1 = 10$ (Each Unit Carries Two Questions)
$5 \times 2 = 10$ (Each Unit Carries one Questions)
SECTION B : $5 \times 5 = 25$ (Each Unit Carries Two Questions (Either or Type))
SECTION C : $3 \times 10 = 30$ (Each Unit Carries One Questions)

Total $= 75$

CC- II DIFFERENTIAL CALCULUS

Theory Hours	: 4	**Course Code**	: U23MC102
Practical Hours	: -	**Credits**	: 4
Exam Hours	: 3	**Internal**	: 25
		External	: 75

Objectives:
    1.The basic skills of differentiation, successive differentiation, and their applications.
    2.Basic knowledge on the notions of curvature, evolutes, involutes and polar co-ordinates
    and in solving related problems.

UNIT-I: Successive Differentiation: Introduction (Review of basic concepts) – The nth derivative – Standard results – Fractional expressions – Trigonometrical transformation – Formation of equations involving derivatives – Leibnitz formula for the nth derivative of a product.

UNIT-II: Envelope: Method of finding the envelope – Another definition of envelope – Envelope of family of curves which are quadratic in the parameter.

UNIT-III: Curvature: Definition of Curvature – Circle, Radius and Centre of Curvature – Evolutes and Involutes – Radius of Curvature in Polar Co-ordinates - Pedal equations of a curve.

UNIT-IV: Linear Asymptotes and singular points (node, cusp and conjugate points).

UNIT-V: Tracing of curves – Folium of Descartes, Cycloid, Cardioid and Lemniscate of Bernoulli.

TEXT BOOK:
1. T K Manicavachagom Pillay and others Differential Calculus,Volume I, S.V.Publications, Chennai- Reprint 2000.

REFERENCE(S):
1. A.Singaravelu, Allied Mathematics-I-Aug 2007(1st Edition)
2. A.Singaravelu, Allied Mathematics-II-June 2010(2nd Edition)

 UNIT I : Chapter III - (1.1 to 1.6 & 2.1,2.2)
UNIT II: Chapter X - (1.1 to 1.4)
UNIT III: Chapter X - (2.1 to 2.8)
UNIT IV: Chapter XI - (1 to 3), Chapter XII - (1 to 7)
UNIT V: Chapter XIII - (1 to 2)

COURSE OUTCOMES (for Mapping with POs and PSOs)
Students will be able to

CLO 1: Find the nth derivative, form equations involving derivatives and apply Leibnitz formula
CLO 2: Find the envelope of a given family of curves
CLO 3: Find the evolutes and involutes and to find the radius of curvature using polar co- ordinates
CLO 4: Determine Liner Asymptotes and singular points
CLO 5: Evaluate Tracing of curves and Folium of Descartes, Cycloid, Cardioid and Lemniscate of Bernoulli.

	Pos						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	√	√	√	-	-	√	√	√	√
CLO2	√	√	√	-	-	-	√	√	√
CLO3	√	√	√	√	-	√	√	√	√
CLO4	√	√	√	√	√	-	√	√	√
CLO5	√	√	√	√	√	-	√	√	√

Question Paper Pattern

SECTION A : $10 \times 1 = 10$ (Each Unit Carries Two Questions)
               $5 \times 2 = 10$ (Each Unit Carries one Questions)
SECTION B : $5 \times 5 = 25$ (Each Unit Carries Two Questions (Either or Type))
SECTION C : $3 \times 10 = 30$ (Each Unit Carries One Questions)

    Total = 75

FC- FUNDAMENTALS OF MATHEMATICS

Theory Hours	: 2	Course Code : U23M1FC
Practical Hours	: -	Credits : 2
Exam Hours	: 3	Internal : 25
		External :75

Objectives:
- Basic ideas on the Properties of union, intersection and Complement of Operations..
- Knowledge to find Elementary Operation of rank of matrix.

Unit I: Sets: Introduction-Notation and Description of sets-Subsets-VENN Euler's diagram-Operations of sets.

Unit II: Properties of sets operation: Properties of union, intersection and Complement of Operations.

Unit III: Matrix Algebra: Basic definition, Matrix Operations Addition-Multiplication, Transpose of Matrix-Inverse of Square Matrix.

Unit IV: Determinants: Properties of determinant-Elementary Operation of rank of matrix.

Unit V: Logic: Introduction- T-F statement-Connectivity-Conjunction-disjunction-Negation-Condition-Bi-condition.

TEXT BOOK:
1. Dr. M. K. Venkatraman, Dr. N. Sridharan, N. Chandrasekaran. The National Publishing
   Company, Reprint October 2001.

REFERENCE(S):
1. "Discrete Mathematical Structures": Tremblay and Manohar, Tata McGraw Hill
2. "Discrete Mathematics": 1 st edition by Maggard Thomson

UNIT I   : Chapter 1 (section 1 to section 6)
UNIT II   : Chapter 1 (section 7 (1 –5))
UNIT III : Chapter 6 (section 1 to section 3)
UNIT IV : Chapter 6 (section 3 to section 4)
UNIT V   : Chapter 9 (section 1 to section 3)

COURSE OUTCOMES (for Mapping with POs and PSOs)
The students will be able to

CLO1: Notation and Description of sets, Subsets, VENN Euler's diagram.
CLO2: Crack challenging problems of simplifications based on Properties of union, intersection and Complement of Operations.
CLO3: Learn Matrix Operations Addition-Multiplication, Transpose of Matrix-Inverse of Square Matrix.
CLO4: Study Elementary Operation of rank of matrix.
CLO5: Study Introduction, T-F statement, Connectivity, Conjunction.

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	√	√	√	-	-	-	√	√	√
CLO2	√	√	√	-	√	-	√	√	√
CLO3	√	√	√	√	-	-	√	√	√
CLO4	√	√	√	√	-	√	√	√	√
CLO5	√	√	√	√	√	-	√	√	√

Question Paper Pattern

SECTION A : $10 \times 1 = 10$ (Each Unit Carries Two Questions)
                    $5 \times 2 = 10$ (Each Unit Carries one Questions)
SECTION B : $5 \times 5 = 25$ (Each Unit Carries Two Questions (Either or Type))
SECTION C : $3 \times 10 = 30$ (Each Unit Carries One Questions)

         Total = 75

CC- III INTEGRAL CALCULUS

Theory Hours	: 4	**Course Code**	: U23MC203
Practical Hours	: -	**Credits**	: 4
Exam Hours	: 3	**Internal**	: 25
		External	: 75

Objectives:
- Knowledge on integration and double, triple integrals and improper integrals.
- Knowledge about Beta and Gamma functions and their applications. Skills to Determine Fourier series expansions.

UNIT-I: Properties of definite integrals **-** Reduction formulae - Types and examples.

UNIT-II: Integration of product of powers of algebraic and logarithmic functions - Bernoulli's formula.

UNIT-III: : Double Integrals - definition of double integrals - evaluation of double integrals – double integrals in polar coordinates - Change of order of integration.

UNIT-IV: Triple integrals - Applications of multiple integrals - volumes of solids of revolution.

UNIT-V: : Beta and Gamma functions – definitions – recurrence formula of Gamma functions – properties of Beta and Gamma functions relation between Beta and Gamma functions - Applications.

TEXT BOOK:
1. S. Narayanan and T. K Manicavachagom Pillay, Calculus, Volume – II, S.Viswanathan (Printers) PVT.LTD., 2012

REFERENCE(S):
1. A.Singaravelu, Allied Mathematics-I-Aug 2007(1st Edition)
2. A.Singaravelu, Allied Mathematics-II-June 2010(2nd Edition)
3. H. Anton, I. Birens and S. Davis, Calculus, John Wiley and Sons, Inc., 2002.
4. G. B. Thomas and R.L. Finney, Calculus, Pearson Education, 2007.
5. D. Chatterjee, Integral Calculus and Differential Equations, Tata-McGraw Hill Publishing   Company Ltd.

6. P. Dyke, An Introduction to Laplace Transforms and Fourier Series, Springer Undergraduate Mathematics Series, 2001 (second edition).

 Unit I   :   Chapter 1 (sections 11,13 – 13.9)
Unit II :   Chapter 1 (sections 13.10 ,15.1)
Unit III :   Chapter 5 (sections – 1 to 3, 3.1, 3.2)
Unit IV :   Chapter 5(section- 4 to 6, 6.1, 6.2)
Unit V   :   Chapter 7 (sections 2.1 to 6)

COURSE OUTCOMES (for Mapping with POs and PSOs)
Students will be able to

CLO 1: Determine the integrals of algebraic, trigonometric functions.
CLO 2: Logarithmic functions and to find the reduction formulae.
CLO 3: Evaluate double and triple integrals and problems using change of order of integration
CLO 4: Applications of multiple integrals and volumes of solids of revolution.
CLO 5: Explain beta and gamma functions and to use them in solving problems of integration

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	√	√	√	-	-	-	√	√	√
CLO2	√	√	√	√	-	-	√	√	√
CLO3	√	√	√	-	-	√	√	√	√
CLO4	√	√	√	-	√	-	√	√	√
CLO5	√	√	√	√	√	√	√	√	√

Question Paper Pattern

SECTION A : $10 \times 1 = 10$ (Each Unit Carries Two Questions)
                     $5 \times 2 = 10$ (Each Unit Carries one Questions)
SECTION B : $5 \times 5 = 25$ (Each Unit Carries Two Questions (Either or Type))
SECTION C : $3 \times 10 = 30$ (Each Unit Carries One Questions)

           Total   =   75

CC- IV ANALYTICAL GEOMETRY (TWO&THREE DIMENSIONS)

Theory Hours : 4	**Course Code** : **U23MC204**
Practical Hours : -	**Credits** : 4
Exam Hours : 3	**Internal** : 25
	External : 75

Objectives:
- Necessary skills to analyze characteristics and properties of two- and three-dimensional geometric shapes.
- To present mathematical arguments about geometric relationships.
- To solve real world problems on geometry and its applications.

UNIT - I

System of Planes-Length of the perpendicular–Equation of the planes bisecting the angle between the plane.

UNIT - II:

Polar coordinates: General polar equation of straight line – Equation of a circle -Equation Chord of circle.

UNIT - III

Representation of line–angle between a line and a plane – co-planar lines– shortest distance between two skew lines –length of the perpendicular.

UNIT - IV

Equation of a sphere – general equation - section of a sphere by a plane - Equation of the circle - Tangent plane – orthogonal spheres.

UNIT - V

Equation of a cone – Right circular cone – Intersection of a straight line and Quadric cone – Equation of cylinder – Enveloping cylinder.

TEXT BOOKS:

1. P Duraipandian, Laxmi Duraipandian and D Muhilan, Analytical Geometry 2D, Emerald Publishers, 1997.
2. T K Manicavachagom Pillay and T Natarajan, Analytical geometry part-II 3D, S Viswanathan(Printers) PVT.LTD., 2013
3. A. Singaravelu and R. Ramaa, Analytical Geometry of 3Dimensions & Integral calculus (Paper II) A.R. Publications, June 2003.

REFERENCE(S):
1. S.Arumugam and Isacc , Calculus, volume I, New Gamma Publishing House, 1991
2. S.Narayanan T K Manicavachagom Pillay, Trigonometry, S. Viswanathan, Pvt Limite and Vijay Nicole Imprints Pvt Ltd, 2004.
3. Robert J. T. Bell, Co-ordinate Geometry of Three Dimensions.
4. Robert C. Yates, Analytic Geometry with Calculus, Prentice Hall, Inc., New York, 1961.

5.Calculus and Analytical Geometry, G.B. Thomas and R. L. Finny, Pearson Publication, 9th Edition, 2010.
6.William H. McCrea, Analytical Geometry of Three Dimensions, Dover Publications, Inc, New York, 2006.
7.. John F. Randelph, Calculus and Analytic Geometry, Wadsworth Publishing Company, CA, USA, 1969.
8.William F. Osgood and William C. Graustein, Plane and Solid Analytic Geometry, Macmillan Company, NewYork, 2016.

    Unit I : Chapter 1&2 (section- 2.18-2.38) Text book-3
    Unit II : Chapter 9 (section-9.1,9.2,9.3-9.5) Text book-1
    Unit III : Chapter 1&2 (section- 2.39-2.75) Text book-3
    Unit IV : Chapter 1&2 (section-2.75-2.110) Text book-3
    Unit V : Chapter-5 (section – 2 , 3 & 8) Text book-2

COURSE OUTCOMES (for Mapping with POs and PSOs)
    Students will be able to

CLO 1: Explain in detail the system of Planes
CLO 2: Find the polar equations of straight line and circle, equations of chord.
CLO 3: Explain in detail the system of Straight lines
CLO 4: Explain in detail the system of Spheres
CLO 5: Find the equation of cone and cylinder.

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	√	√	√	√	-	-	√	√	√
CLO2	√	√	√	√	-	-	√	√	√
CLO3	√	√	√	√	-	-	√	√	√
CLO4	√	√	√	√	√	√	√	√	√
CLO5	√	√	√	√	√	√	√	√	√

Question Paper Pattern

SECTION A : $10 \times 1 = 10$ (Each Unit Carries Two Questions)
               $5 \times 2 = 10$ (Each Unit Carries one Questions)
SECTION B : $5 \times 5 = 25$ (Each Unit Carries Two Questions (Either or Type))
SECTION C : $3 \times 10 = 30$ (Each Unit Carries One Questions)

      Total = 75

SEC- I MATHEMATICS FOR COMPETITIVE EXAMINATIONS – I

Theory Hours	: 2	**Course Code**	: U23M2SE1
Practical Hours	: -	**Credits**	: 2
Exam Hours	: 3	**Internal**	: 25
		External	: 75

Objectives:
1. Develop Mathematical Aptitude Skills.
2. The formulae given are useful over many problems.
3. To provide a confidence to appear in competitive examinations.

UNIT – I:
Numbers – HCF and LCM – Decimal Fractions.

UNIT – II:
Square Roots and Cube Roots – Percentage – Average – Ratio and Proportion – Partnership – Profit and Loss.

UNIT – III:
Time and Work – Time and Distance.

UNIT – IV:
Problems on Trains – Problems on Numbers – Problems on Ages.

UNIT – V:
Area – Volume and Surface Areas.

TEXT BOOK:
[1].R.S Aggarwal, Quantitative Aptitude , S.Chand and company Ltd., New Delhi,2008.

REFERENCE(S) :
[1].B.S.Sijwali, quantitative aptitude Arihant Publications(india) Pvt Ltd 2007.
[2].Abhijit Guha, Quantitative Aptitude for Competitive Examinations, Mc Graw Hill Companies, 2006.
[3].Arora .P.N. and Arora.s. 2009,Quantitative Aptitude Mathematics:Volume 1,S.Chand and company Ltd.
[4].Kothari. C.R.1989, Quantitative techniques,Vikas Publishing House Pvt Ltd.
[5].Srinivasan.T.M., Perumalswami.S. and gopala Krishnan.M.D., 1985 , Elements of Quantitative Techniques, Emerald Publishers.

COURSE OUTCOMES (for Mapping with POs and PSOs)
The students will be able to

CLO 1: Expose various types of Numbers. Use least common multiple method.
CLO 2: Crack challenging problems of simplifications based on complex function, square roots, cubic roots, unit digits, Exponents and percentages within a few seconds with the help of short tricks without knowledge.
CLO 3: Learn and apply tips and logical method on difficult problems of topics like time and work, pipes and cistern, speed and distance, average speed etc.
CLO 4: Study Problems on Trains, Numbers, Ages.
CLO 5: Apply easiest technique to solve Volume and Surface area.

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CLO1	√	√	√	√	-	-	√	√	√
CLO2	√	√	√	√	-	-	√	√	√
CLO3	√	√	√	√	√	√	√	√	√
CLO4	√	√	√	√	√	√	√	√	√
CLO5	√	√	√	√	-	-	√	√	√

Question Paper Pattern

Each unit fifteen multiple choice questions for all topics: 75 x 1 = 75