

CC -M4(V)

Session:2024-25	
Part A- Introduction	
Subject/Course	Mathematics
Semester	IV
Name of the Course	Quantitative Aptitude and Reasoning
Course Code	24UN-MTH-VOC 402
Course Type:	CC -M(V4)
Level of the course	100-199
Pre-requisite for the course(if any)	----
Course Learning Outcomes(CLOs):	On successful completion of the course the students will be able to: • Understand the basic concepts of quantitative ability • Understand the basic concepts of logical reasoning skills • Acquire satisfactory competency in use of reasoning • Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning Ability • Compete in various competitive exams like CAT, CMAT, GATE, GRE, UPSC, GPSC etc.

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CB10-04- Mathematics
2024-2025

Credits	Theory	Tutorial	Total
	3	1	4
Contact Hours	3	1	4
Internal Assessment Marks	30	—	30
End Term Examination Marks	70	—	70
Examination Time	3 Hours	3 Hours	
Max.Marks:100			
Part B-Contents of the Course			
<u>Instructions for Paper- Setter</u>			
Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 questions covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit including the compulsory question.			
Unit	Topics	Contact Hours	
I	Quantitative Ability (Fundamentals & Numbers) Number System (Natural, Integer, Rational, Irrational numbers), Simplification (BODMAS), Divisibility rules LCM & HCF, Surds & Indices, Remainders.	12	
II	Quantitative Ability (Commercial & Time based Problems) Percentage, Interest and Discount, Average, Partnership, Time, Speed & Distance, Boats & Streams, Mixture & Allegation	12	
III	Applied Mathematics (Concept & Application based) Algebra (Linear & Quadratic equations), Mensuration (Measurement 2D & 3D figures), Probability (basic level) Data Interpretation (Bar graph, Histogram, Pie chart etc.)	14	
IV	Logical Reasoning (Deductive Reasoning) Blood Relation, Directional Sense, Number and Letter Series Calendars, Clocks, Venn Diagrams, Seating Arrangement Syllogism, Mathematical Operations	12	

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CBLU-04- Mathematics
2024-2025

Suggested Evaluation Methods	
Internal Assessment: > Theory30 • ClassParticipation:5 • Seminar/presentation/assignment/quiz/classstestetc.:10 • Mid-TermExam:15	End Term Examination: ☐ Theory70 - Written Examination
Part C-Learning Resources	
1. A Modern Approach to Verbal & Non-Verbal Reasoning by R. S. Agarwal 2. Analytical and Logical Reasoning by B. S. Sijwali 3. Quantitative Aptitude for Competitive Examination by R. S. Agarwal 4. Analytical and Logical Reasoning for CAT and other Management Entrance Test by B. S. Sijwali 5. Quantitative Aptitude for Competitive Examinations by Abhijit Guha, 4th Edition	

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Session:2024-25	
Part A- Introduction	
Subject/Course	Mathematics
Semester	IV
Name of the Course	Applied Mathematics-I (For students Not having Mathematics as Major subject)
Course Code	24UN-MTH-VOC 401
Course Type:	CC -M(V4)
Level of the course	100-199
Pre-requisite for the course(if any)	-----
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. Analyze and construct different types of sequences, apply recursive formulas, solve difference equations, and determine convergence using algebraic techniques and important limits. 2. Apply the method of least squares to fit straight lines, parabolic, and exponential curves to data. Formulate differential equation models for real-world phenomena such as growth, decay, and logistic population dynamics. 3. Compute Laplace transforms and inverse transforms of elementary functions, utilize properties and the convolution theorem, and apply Laplace techniques to solve ordinary differential equations with initial conditions. 4. Perform Fourier integrals and transformations (sine, cosine, and general), apply their properties and convolution theorem, and use Fourier methods to solve DE.



CBLO-V4-Mathematics
2024-2025

CC-M4(V)

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Internal Assessment Marks	30	--	30
End Term Examination Marks	70	--	70
Examination Time	3 Hours	3 Hours	
Max.Marks:100			
Part B-Contents of the Course			
<u>Instructions for Paper- Setter</u>			
Note: The examiner will set 9 questions selecting two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 questions covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit including the compulsory question.			
Unit	Topics	Contact Hours	
I	Sequences: Definition, recursion formula for sequences: Fibonacci Sequence, Tower of Brahma, Difference equation, Types of sequences, Convergent sequences: convergence of sequence, algebra of convergent sequences, more on convergence of sequence, some important limits.	12	
II	Method of least square and curve-fitting: Fitting of a straight line, parabolic curve and exponential type curve. Differential equations in Mathematical Modeling: Introduction, Exponential Growth Model, Exponential Decay Model, Population Growth with Logistic Growth model.	12	
III	Laplace Transformation and its Applications: Introduction, Laplace transformation of some elementary functions, Properties of Laplace Transform, Inverse Laplace Transformation, Convolution theorem, transformation of differential and integration, Applications to solve ordinary differential equations.	14	
IV	Fourier Integrals, Fourier Transformation, Fourier sine and cosine transformation, Properties of Fourier transformation, Inverse Fourier Transformation, Convolution theorem, Applications to solve partial differential equations. method, Milne-Simpson's method.	12	

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CBU-VG- Mathematics
2024-2025

Suggested Evaluation Methods	
Internal Assessment: > Theory30 • ClassParticipation:5 • Seminar/presentation/assignment/quiz/classstestetc.:10 • Mid-TermExam:15	End Term Examination : ☐ Theory70 Written Examination
Part C-Learning Resources	
1.R.D.Sharma and U. Kumar, Basic Applied Mathematics for the Physical Sciences; Pearson, 2010. 2. L.Debnath and D. Bhatta, Integral Transform and their applications, CRC Press,2015.	



CBLU-VG- Mathematics
 Sec 2024-2025