DEPARTMENT OF MATHEMATICS

B.Sc. MATHEMATICS

(Students admitted during 2020-2021 Onwards)

(Under CBCS with Outcome Based Education (OBE) Pattern)

SYLLABUS

III & IV SEMESTER

GOBI ARTS & SCIENCE COLLEGE

(Govt. Aided Autonomous Co-educational Institution, Affiliated to
Bharathiar University, Coimbatore, Accredited with 'A' Grade by NAAC (4th cycle)
and Recognised as a STAR College by DBT, Government of India)

KARATTADIPALAYAM POST,

GOBICHETTIPALAYAM - 638453

ERODE DISTRICT.

BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN

K1-Remember; **K2**- Understanding; **K3**- Apply; **K4**-Analyze; **K5**- Evaluate

I. END OF SEMESTER (EOS) EXAMINATIONS:

1. Part I, II & III-Theory: 70 Marks

Knowledge Level	Section	Marks	Description	Total
K1	A (Answer All)	15 × 1 = 15	MCQ	70
K2	B (Either or Pattern)	5 × 5 = 25	Short answers	
K3 & K4	C (Answer 3 out of 5)	3 × 10 = 30	Descriptive/Detailed	

2. Practical Examinations: 70 Marks

Knowledge Level	Section		Total
	Practical	Record work	
K3	60	10	70
K4			
K5			

II. CONTINUOUS INTERNAL ASSESSMENT (CIA):

1. Test – I & II: 30 Marks (Theory)

Knowledge Level	Section	Marks	Description	Total
K1	A (Answer All)	10 × 1 = 10	MCQ	30
K2	B (Answer 2 out of 3)	2 × 5 = 10	Short answers	
K3 & K4	C (Answer 1 out of 2)	1 × 10 = 10	Descriptive/Detailed	

2. Practical Internal Assessment: 30 Marks

Knowledge Level	Section		Total
	Test	Lab Performance	
K3	20	10	30
K4			
K5			

Components of Continuous Internal Assessment (CIA)

Components		Calculation	CIA Total
Test 1	30	$\frac{\text{Test 1 + Test 2}}{2}$	30
Test 2	30		

Programme Code:	B.Sc.	**Programme Title:**	Mathematics	
Course Code:	19UAMA05	**Course Title:**	**Batch:**	2019
Total Hours:	60	Mechanics	**Semester:**	III
			Credits:	4.0

Course Objective

The course aims

- To study of Mechanics, including both statics that investigates how structures maintain equilibrium and dynamics that described the kinematics of dynamical systems.
- To solve the relevant problems, students can learn rigorously the fundamental principles of mechanics in a systematical approach.

Course Outcomes (CO)

On the successful completion of the course, students will be able to

Knowledge Level	CO Number	Course Outcome
K2	**CO1**	Able to analyze force systems in plane and also in space.
K2, K3	**CO2**	Learn to apply the principles of static equilibrium to particles and rigid bodies.
K3, K4	**CO3**	Able to solve problems involving frictional forces and understand the laws of motion.
K2, K3	**CO4**	Learn to apply the principles of work and energy as well as momentum to particles.

K1 – Remember; **K2 –** Understanding; **K3 –** Apply; **K4 –** Analyze; **K5 –** Evaluate

SYLLABUS		
Unit	**Content**	**No. of Hours**
I	Forces acting at a point: Parallelogram law – Triangle of forces – perpendicular triangle of forces – converse of the triangle of forces – polygon of forces – Lami's theorem. Extended form of parallelogram law. Resolution of a force – resultant of any number of coplanar forces acting at a point. Book 1: Chapter – II Section: 2.1 – 2.16.	**12**
II	Parallel forces and moments: Introduction – resultant of two like parallel forces – resultant of two unlike and unequal parallel forces – conditions of equilibrium of three coplanar parallel forces. Moment of a force: Representation of a moment – Varigonon's theorem – Moment of a force about an axis. Friction: Introduction – Laws of friction – coefficient of friction – Angle of friction – Cone of friction – Equilibrium of a particle on a rough inclined plane. Book 1: Chapter – III Sections 3.1 - 3.14 Book 1: Chapter – VII Sections 7.1 - 7.13	**12**

III	The Laws of Motion: Newton's laws of motion – Weight – forces of friction – motion of a particle on a rough horizontal and inclined plane. Work – power – energy – principle of conservation of energy. Collision of elastic bodies: Fundamental laws of impact – Direct and oblique impact of two smooth spheres – loss of kinetic energy due to direct and oblique impacts. Book 2: Chapter IV Sections 4.1 - 4.16 and 4.24 - 4.36 Chapter VIII Sections 8.1 – 8.8	**12**
IV	Projectiles: Path of the projectiles – characteristics of the motion of a projectile – velocity of the projectile in magnitude and direction. Range on an inclined plane. Motion on the surface of a smooth inclined plane. Book 2: Chapter VI Sections 6.1 - 6.16	**12**
V	Motion under the action of central forces: Radial and transverse components of velocity and acceleration; equiangular spiral; central orbits – petal equation of the central orbit. Two-fold problems in central orbits – Kepler's laws of planetary motion. Book 2: Chapter XI Sections 11.1 to 11.11.	**12**

Text Books:

1. Dr.M.K.Venkataraman, Statics, Agasthiar Publications, Seventeenth edition, 2014.
2. Dr.M.K.Venkataraman, Dynamics, Agasthiar Publications, Sixteenth edition, 2014.

Reference Books:

1. P.Duraipandian and Laxmi Duraipandian, "Mechanics", S.Chand publications.
2. SL.Loney, "The element of statics and Dynamics", Arihant publications.

E-references:

1. Introduction to statics and dynamics - ruina.tam.cornell.edu
2. https://www.iitg.ac.in

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	S	M	H
CO2	H	S	H	S	M
CO3	S	H	S	H	H
CO4	M	S	H	L	M

S-Strong; **H**-High; **M**- Medium; **L**- Low

Programme Code:	B.Sc.	**Programme Title:**	Mathematics	
Course Code:	19UAMA06	**Course Title:**	**Batch:**	2019
Total Hours:	60	Probability and Statistics	**Semester:**	III
			Credits:	3.5

Course Objective

The course aims

- To understand the knowledge of Probability and the standard statistical distributions.

Course Outcomes (CO)

On the successful completion of the course, students will be able to

Knowledge Level	**CO Number**	**Course Outcome**
K1	**CO1**	Understand the concepts of probability and Recognizing the prevalence and impact of probability in his everyday life.
K2	**CO2**	Understand the basic concepts of one dimensional and two dimensional random variables. How to derive the probability density function of transformations of random variables and use these techniques to generate data from various distributions.
K3	**CO3**	Analyze and apply the concepts of expectation and variance, and describe their properties.
K4	**CO4**	Evaluate the correlation coefficients and regression and take the decision between the variables.

K1 – Remember; **K2 –** Understanding; **K3 –** Apply; **K4 –** Analyze; **K5 –** Evaluate

SYLLABUS		
Unit	**Content**	**No. of Hours**
I	Probability - Introduction - Classical definition - Addition theorem - Multiplication Theorem - Axioms of Probability - Conditional Probability - Baye's Theorem - Independent Events. Chapter : 1	**12**
II	Random variables - Definition - Types of Random Variables - Distribution Functions and its Properties - Two Dimensional Random variables - Types of Two Dimensional Random Variables - Marginal Density function - Conditional Density Function - Independent Random Variables. Chapter : 2	**12**
III	Mathematical Expectations: Definition - Properties - Examples - Variance: Definition - Properties - Examples - Moments: Definition - Central Moments about the Origin - Examples. Moment Generating Function : Definition - Properties - Examples. Chapters : 3, 4 (Exclude Tchebeche's Inequality), 5.	**12**
IV	Correlation : Definition - Correlation Coefficient and its Properties - Rank Correlation - Regression : Definition - Estimation of Regression lines - Regression Coefficients and its properties. Chapter 8 : Page Number : 8.16 - 8.47 and Chapter 9.	**12**

V	Some Special Distributions : Binomial Distribution - Poisson Distribution - Geometric Distribution - Uniform Distribution - Exponential Distribution - Normal Distribution (Calculation of M.G.F, Mean, Variance, Problems only and exclude recurrence formula). Chapters: 12, 13, 15, 16, 17, 18.	**12**

Text Book:

1. Dr. P.R. Vittal, Mathematical Statistics, Margham Publications, Chennai.

Reference Book:

1. S.C. Gupta & V.K. Kapoor, Fundamentals of Mathematical Statistics, 11th Revised edition, Sultan Chand & Sons, New Delhi.

E-reference:

1. https://nptel.ac.in/courses/111105041/

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	S
CO2	S	M	S	M	M
CO3	S	S	S	S	M
CO4	S	S	M	S	S

S-Strong; **H**-High; **M**- Medium; **L**- Low

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	20UBCH01	Course Title:	Batch:	2020
Total Hours:	90	Chemistry	Semester:	III
			Credits:	3.0

Course Objective

The course aims

- To learn about the basic concepts of bonding in chemistry.
- To learn the basic knowledge in organic chemistry.
- To understand the concepts of electro chemistry, photochemistry, adsorption and chemical kinetics.

Course Outcomes (CO)

On the successful completion of the course, students will be able to

Knowledge Level	CO Number	Course Outcome
K1, K2	CO1	Write electronic configuration of elements.
K2	CO2	Explain addition, substitution and elimination reactions.
K2, K3	CO3	Recognize the reaction of electrochemical cells and types.
K2, K3	CO4	Acquire knowledge photochemical excitation and Jablonski diagram.
K4	CO5	Distinguish between a first order reaction and a second order reaction.

K1 - Remember; **K2 -** Understanding; **K3 -** Apply; **K4 -** Analyze; **K5 –** Evaluate

SYLLABUS		
Unit	**Content**	**No. of Hours**
I	**Chemical bonding:** Electronic configuration of first thirty elements – Pauling's exclusion principle – Aufbau principle – Hunds rule - Chemical bonding – Ionic bond – examples: NaCl, $MgCl_2$ – Covalent bond – examples: H_2, N_2. Valence bond theory – limitations of VBT – sigma and pi bonds –Hybridization and geometry in $BeCl_2$, BF_3, NH_3, PCl_5 and SF_6, VSEPR theory. **Molecular orbital theory:** Examples for homonuclear (H_2, N_2, O_2, H_2^+) and heteronuclear molecules (CO, HF) – Comparison of VBT and MOT, para and diamagnetic characteristics.	18
II	**Nature of valency of carbon in organic compounds:** Tetrahedral arrangement of valency of carbon – hybrization and geometry of methane, ethylene and acetylene. Bond breaking and bond forming in organic reactions – homolytic cleavage and heterolytic cleavage – types of attacking reagents – electrophiles, nucleophiles, free radicals and leaving groups – definition with examples. Reaction intermediates – Carbocations, carbanions, free radicals - stability. **Types of reactions:** Substitution – addition – elimination - rearrangement and polymerization – illustration with examples.**Polar effects:** Inductive, Mesomeric, Hyperconjugative and Resonance effects.	18

III	**Eletrochemical cell:** convention regarding the sign of emf of a cell – electrodes-reference electrodes – hydrogen and calomel electrodes – types of electrodes – metal-metal ion electrodes – metal-metal insoluble salt electrodes – glass and ion selective electrodes – single electrode potential – measurement of single electrode potential – electrochemical series – commutation of cell emf – Nernst equation - pH measurement using hydrogen & quinhydrone electrodes – hydrogen-oxygen fuel cell.	**18**
IV	**Photochemistry:** Definition of photochemical reactions - Comparison of thermal and photochemical reactions, laws of photochemistry – quantum efficiency – reason for high and low quantum yield – determination of quantum efficiency - consequence of light absorption by atoms and molecules – Jablonski diagram – fluorescence – phosphorescence – photosensitization – chemiluminescence – applications of photochemistry **Adsorption:** Definition – adsorption, absorption, adsorbate and adsorbent – physical adsorption – chemical adsorption – differences between these two types – factors influencing adsorption.	**18**
V	**Chemical Kinetics:** Rate of reaction – Order, Molecularity, First order reaction – Derivation of rate constant – Second order reaction reactions – derivation of rate constant – Half life period. Determination of order – Graphical method - Ostwald's method – half life method –Effect of temperature on the rate of reaction – Arrhenius equation – Energy activation.	**18**

<* ***- Self study: Definition of specific reaction rate and rate constant>.***

Text Books:

1. Puri, Sharma and Kalia, Principles of inorganic chemistry, Vishal Publications (2008).
2. Puri, Sharma and Pathania, Principles of physical chemistry, Vishal Publications, 47th edition (2016).
3. Arun Bahl and B.S. Bahl, Advanced organic chemistry, S. Chand and Company Ltd. 20th edition (2011).
4. R.D. Madan, G.D. Tuli, S.K. Basu, Sathya Prakash, Advanced Inorganic Chemistry (Vol-I), S. Chand and Company Ltd. 5th edition (2014).
5. P.L. Soni, Text book of Inorganic Chemistry, S. Chand and Sons, 13th edition (2011).

Reference Books:

1. J.D. Lee, Concise Inorganic Chemistry, 4th edition (2018).
2. S.M. Mukerjee and S.P. Singh, Reaction Mechanism in Organic Chemistry, Macmillan Publications India Ltd. 2nd edition (1978).
3. P.W. Atkin's, physical chemistry, Oxford University Press, 4th edition (1990).
4. W.J. Moore, Physical chemistry, Longmans Green & Co. Ltd. 4th edition (1963).
5. F.A. Cotton and Wilkinson Advanced Inorganic Chemistry, Wiley (2007).

E-references:

1. opentextbc.ca/chemistry/chapter/6-4-electronic...
2. web.stanford.edu/.../13_01_24_QOphotochemistry.pdf

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4
CO1	S	S	H	S
CO2	S	H	H	H
CO3	S	S	H	S
CO4	S	H	H	H
CO5	S	S	H	H

S - Strong; **H** - High; **M** - Medium; **L** - Low

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	19UAMA07	Course Title:	Batch:	2019
Total Hours:	75	Analytical Geometry	Semester:	IV
			Credits:	4.0

Course Objective

The course aims

- To enables the students to gain fundamental ideas in 2 dimensions and developer their skill in 3 dimensions. Finally students will be able to identify geometric shapes in objects which they use in their daily lives and analyze the uses of studying 3D.

Course Outcomes (CO)

On the successful completion of the course, students will be able to

Knowledge Level	CO Number	Course Outcome
K1	CO1	Recollect the ideas of 2D and gain a deep knowledge in 3D: Recognize the conic sections from their functions in standard from and from their graphs and convert a function of a conic section from to determine whether it yields a circle, a parabola, an ellipse, or a hyperbola. Also students will be able to identify conic sections used in the real world.
K2	CO2	Understand the basic three dimensional shape and its properties: Identify the condition of perpendicular or parallel of two lines and express equation of the plane that passes through a points and perpendicular to the line given. Determine the angle between any two planes.
K3	CO3	Apply the properties of 3D: Differentiate parallel lines, perpendicular lines and coplanar. Find the length of any line and find the shortest distance between any two skew lines.
K4	CO4	Understand basic three dimensional shapes and recognize them in the real world and analyze the concepts of 3D. The students will apply appropriate techniques, tools, and formulas to determine measurements and gain a more profound understanding of measurements and of geometry.

K1 – Remember; **K2 –** Understanding; **K3 –** Apply; **K4 –** Analyze; **K5 –** Evaluate

SYLLABUS		
Unit	**Content**	**No. of Hours**
I	**Two dimensions (Polar Coordinates):** Polar equation of conic, directrix, chord, tangent and normal.	**15**
II	**Three dimensions:** Straight lines: Condition for two lines to intersect (or coplanar), skew lines, Shortest distance. Equation of the shortest distance and length of the shortest distance for two lines.	**15**
III	Sphere: Equation of a sphere Different forms. Plane section of a sphere. Great circle, Small circle, Intersection of two spheres. Equation of sphere through a circle. Tangent line and tangent plane. Equation of the tangent plane. Condition of tangency.	**15**

IV	**Cone:** Cone, Right circular cone: Equation of a cone. – Different forms, Right circular cone Different forms. Enveloping cone of the of sphere. Equation of the enveloping cone of a sphere. Condition for general equation of second degree to representation cone. Tangent line and tangent plane. Equation of the tangent plane. Condition of tangency, normal. **Cylinder:** Cylinder, Right circular cylinder: Equation of a cylinder Equation of right circular cylinder. Enveloping cylinder of a sphere: Equation of the enveloping cylinder of a sphere.	**15**
V	**Conicoid**: Conicoid, central conicoid. Equation, shapes of the central conicoid, Intersection of a conicoid and a line, Tangent line and tangent plane, Equation of the tangent plane, Condition of tangency, Director sphere, Normal.	**15**

UNIT- 3

<* - Self Study>

Text Books:

Analytical Geometry Part – I (Two Dimensions)
Analytical Geometry Part – II (Three Dimensions) By T.K. Manicavachagom Pillay.
T. Natarajan.

2D:

Unit – I; Chapter IX 1 to 13.

3D:

Unit – II: Chapter III – 1 to 4, 7, 8.
Unit – III: Chapter III – 1 to 8.
Unit – IV: Chapter III – 1 to 8.3.
Unit – V: Chapter III – 9 to 13.

Reference Books:

1. Duraipandian P, Laxmi Duraipandian, Muhilan D, *Analytical Geometry 3 dimensional*, Emerald publishers, 2000.
2. Kandasamy .P. and K. Thilagavathi –Mathematics for B.Sc., Vol. IV –2004 S.Chand and Co. New Delhi.
3. Loney .S.L. -The Elements of Coordinate Geometry -Mcmillan and Company London.B. Stephen John -Analytical Geometry of 3D and vector differentiation: IDEAL publication.
4. Dr.S. Arumugam, A. ThangaPandi Isaac, Analytical Geometry 3D and Vector Calculus New Gamma Publishing House (2011)

E-references:

1. http://www.scribd.com
2. https://brilliant.org
3. www.nabla.hr

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	H	S	M
CO2	M	L	H	S	L
CO3	H	S	L	H	S
CO4	L	H	M	M	H

S-Strong; **H**-High, **M**- Medium, **L**- Low

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	19UAMA08	Course Title:	Batch:	2019
Total Hours:	60	Operations Research	Semester:	IV
			Credits:	3.5

Course Objective

The course aims

- To impart knowledge in concepts and tools of OR.
- To understand the transportation, assignment and sequencing problems to solve by various methods.
- To provide a tight and sufficient control of the management of complex projects through an integrated system of forced planning and evaluation.

Course Outcomes (CO)

On the successful completion of the course, students will be able to

Knowledge Level	CO Number	Course Outcome
K2,K3	**CO1**	Identify and express a decision problem in mathematical form and solving them graphically and simplex problems. Constructing L.P. models for various types of problems- distinguish the feasible solution, optimal solution and basic feasible solution.
K3	**CO2**	Analyze sensitivity of the optimal solution according to changes in the model parameter and model structures.
K1,K2	**CO3**	Recognize and formulate transportation assignment problems and drive their optimal solution.
K1,K2	**CO4**	Ability to sequence requires higher-order thinking skills from recognizing patterns to determine cause and effect.
K2,K3	**CO5**	Understand and analyze different techniques od project management-financial techniques, environmental and market demand.

K1 – Remember; **K2 –** Understanding; **K3 –** Apply; **K4 –** Analyze; **K5 –** Evaluate

SYLLABUS		
Unit	**Content**	**No. of Hours**
I	The Linear Programming Problem – Mathematical formulation- Graphical Solution-LPP – Canonical and Standard forms of LPP – Simplex method – Big – M method –Two – phase Simplex method.	**12**
II	DUALITY IN LPP Concept of duality –Duality and simplex method –Dual simplex method – Dual simplex algorithm.	**12**
III	TRANSPORATATION PROBLEM: North West Corner Rule –Matrix Minima method –Vogel's Approximation method – Moving towards optimality –MODI method –Assignment Problem – Hungarian Assignment method.	**12**
IV	SEQUENCING PROBLEMS Problem with n jobs and two machines – Problems with n jobs and three machines – Problems with n jobs and m machines.	**12**
V	NETWORK SCHEDULING BY PERT/CPM Basic concepts – constraints in network – Time calculation – Critical path method –PERT calculations.	**12**

Text Book:

1. Operations Research-kanti swarup, P. K. Gupta, Manmohan, Reprint 2003.

Reference Books:

1. An introduction to operations research by H. Taha.
2. Principles of operations research by H. M. Wagner.

E-references:

1. https://simplesnippets.tech/linearprorammingproblem#LPP
2. https://amzn.to/2vgimyJ
3. https://simplesnippets.tech/graphicalsolution#operationsresearch
4. https://Binghamton.edu/seorl

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	H	S	H
CO2	M	H	S	M	M
CO3	H	M	H	M	H
CO4	M	M	M	M	H
CO5	S	H	H	S	S

S-Strong; **H**-High, **M**- Medium, **L**- Low

Programme Code:	B.Sc.	**Programme Title:**	Mathematics, Physics & Botany	
Course Code:	19UBCHP1	**Course Title:**	**Batch:**	2019
Total Hours:	90	Allied Core Chemistry Practical	**Semester:**	IV
			Credits:	2.0

Course Objective

The course aims

- To develop the experimental skill in volumetric analysis.
- To analyze the organic compounds.

Course Outcome

On the successful completion of the course, students will be able to

Knowledge Level	CO Number	Course Outcome
K4	**CO1**	Estimate quantitatively the metal ions.
K5	**CO2**	Identify the various organic substances.

K1 - Remember; **K2 -** Understanding; **K3 -** Apply; **K4 -** Analyze; **K5 -** Evaluate

SYLLABUS		
Unit	**Content**	**No. of Hours**
	I. Volumetric analysis (Standard solution is to be given) **1. Acidimetry:** a. Estimation of sodium carbonate. b. Estimation of bicarbonate and Carbonate in a mixture using two indicators. **2. Permangonometry:** a. Estimation of Ferrous iron. b. Estimation of oxalic acid. **3. Dichrometry:** a. Estimation of Ferrous iron using internal indicator. **4. Complexometry:** a. Estimation of Zn. b. Estimation of Mg. c. Estimation of Total hardness of water. **II. Organic Chemistry** 1. Detection of elements (N,S and Halogens) 2. To distinguish between aliphatic and aromatic, saturated and unsaturated compounds. 3. Functional group tests for phenols, aromatic amines, acids, amides and carbohydrates.	**90**

Text Books:

1. V. Venkateswaran, R. Veerasamy and A.R. Kulandaivelu, Basic principles of Practical Chemistry, Sultan Chand and Sons, 2nd edition (1997).
2. P.K. Mani and A.O. Thomas, Textbook For Practical Chemistry for B.Sc. Main students, Xavier press, Cannanore (2003).
3. Gnanapragasam and Ramamurthy, Organic chemistry lab manual, Viswanathan S. Printers and publishers Pvt, Ltd. (2009).

Reference Books:

1. J. Mendham, Vogel's Quantitative Chemical Analysis, Pearson Education; 6th edition (2009).
2. V.K. Ahluwalia, S. Dhingra, A. Gulati, College Practical Chemistry, Universities Press (India) Limited (2012).
3. B.S. Furniss, A.J. Hannaford, P.W.G. Smith and A.R. Tatchell, Vogel's Textbook of Practical Organic Chemistry, 5th edition, Pearson Education Ltd. Singapore (2004).

E-references:

1. http://www.federica.unina.it/agraria/analytical-chemistry/volumetric-analysis/
2. http://wwwchem.uwimona.edu.jm/lab_manuals/c10expt25.htm

Mapping with Programme Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4
CO1	H	S	S	H
CO2	S	S	H	H

S - Strong; **H -** High; **M -** Medium; **L –** Low

Question Paper Pattern

(Common for Major, Allied, Allied Optional and Major Optional Papers)

For EOS Examinations: 70 Marks

The Question Paper is to be divided into THREE Sections.

Section-A Carries 15 Marks, Section-B Carries 25 Marks and Section-C Carries 30 Marks.

Section-A Contains 15 Multiple Choice Questions. (15 x 1 = 15 Marks)

Three Questions from each unit. (Q. No: 1 to 15)

Section-B Contains 5 Either or Choice Questions. (5 x 5 = 25)

Each Question carries 5 Marks. Both (a) and (b) from the same unit.

Q. No.: 16 (a) or (b) to 20(a) or (b)

Section-C Contains 5 Questions out of which, 3 Questions are to be answered. (3 x 10 = 30)

Each Question carries 10 Marks. One Question from each unit. Q. No.: 21 to 25

For CIA Examinations: 30 Marks

Section-A: 10 Multiple Choice Questions. (10 x 1 = 10)

Section-B: Two Questions out of Three. (2 x 5 = 10)

Section-C: One Question out of Two. (1 x 10 = 10)

Programme Code:	ALL U.G.	Programme Title:	Allied Optional	
Course Code:	19UDMA01	Course Title:	Batch:	2019
Total Hours:	90	Business Mathematics	Semester:	IV
			Credits:	5.0

Course Objective

The course aims

- To study Simple Interest, Compound Interest, Discount and Annuities for Business problem.
- To study the Set Operations and Matrix operation.
- To study the simple problems in Differentiation and Integration.

Course Outcome

On the successful completion of the course, students will be able to

Knowledge Level	CO Number	Course Outcome
K2, K3	CO1	Acquire the knowledge in the areas of business problems the simple interest & compound interest.
K1, K2	CO2	Analyze the concept of A.P., G.P. and set theory.
K1, K2	CO3	Enhancing the ability to solve matrices.
K3	CO4	Demonstrate the rate of change in economics status such as supply, demand functions, cost function & managerial functions.
K3	CO5	Understand the ideas of integration for solving consumers' surplus and producers' surplus related problems.

K1 - Remember; **K2 -** Understanding; **K3 -** Apply; **K4 -** Analyze; **K5 –** Evaluate

SYLLABUS		
Unit	**Content**	**No. of Hours**
I	Solutions of Simple Simultaneous equations applied to Business problems. Simple and Compound Interest – Sinking Funds – Annuities – Present values – Discounts.	18
II	Arithmetic and Geometric Progression – Simple applications to Business problems. SETS: Operations of Sets – Venn Diagrams and applications to Business and Economic Problems.	18
III	MATRIX – Matrix operations – Addition, Subtraction and Multiplication – Rank of Matrix – Inverse of Matrix and Solutions of Simultaneous Linear Equations – Input-Output Analysis.	18
IV	Ideas on Limits (No Problem) and Continuity of functions, Differentiation (Trigonometric functions excluded) First order and Second order – Maxima and Minima and Application as rate measures – Cost function – Supply and Demand functions etc. and Managerial functions.	18
V	Elementary Integration (as reverse process of differentiation) Simple substitution and Partial fraction methods. Simple application to Economics.	18

Text Book:

Business Mathematics and Statistics by PA. Navnitham, Jai Publishers, Trichy, Reprint 2018.

Reference Books:

1. An introduction to business mathematics by Sundaresan and Jayaseelan.
2. Business Matematics by Tafferd.
3. Business Mathematics by Dharmapadam.

E-references:

1. https://byjus.com/jee/matrices
2. https://www.patreon.com/patrickjmt
3. https://web2.slc.qc.ca/pcamire/set
4. https://bit.ly/2yZbjC

Mapping with Programme Specific Outcomes

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	H	H	M	H
CO2	M	M	S	S	H
CO3	M	H	M	S	M
CO4	S	S	H	M	S
CO5	S	H	S	M	S

S - Strong; **H -** High; **M -** Medium; **L –** Low