SANT NANDLAL SMRITI VIDYA MANDIR, GHATSILA

YEARLY SYLLABUS OF APPLIED MATHEMATICS

SESSION – 2025-2026

STD – XI Commerce

MONTH	NO. OF CLASSES	TOPIC TO BE TAUGHT	ACTIVITY	LEARNING OUTCOME	VALUES & SKILLS IMPARTED	ASSESSMENT
APRIL	21	**Sets** Introduction to sets – definition Representation of sets Types of sets and their notations Subsets Intervals Venn diagrams Operations on sets	Use of Venn diagram in solving practical problems	**Students will be able to:** ● Define set as well-defined collection of objects ● Represent a set in Roster form and Set builder form ● Identify different types of sets on the basis of number of elements in the set ● Differentiate between equal set and equivalence set	Identify & Categories similar objects into a Distinct Sets Use of Venn Diagram to solve real life problems & Reasoning Problems asked in various competitive exams	* Exercise Questions & Answers to be assessed * Questions from other reference books will be done * MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions

				● Enlist all subsets of a set ● Find number of subsets of a given set ● Find number of elements of a power set ● Express subset of real numbers as intervals ● Apply the concept of Venn diagram to understand the relationship between sets ● Solve problems using Venn diagram ● Perform operations on sets to solve practical problems		
		Relations Ordered pairs		● Explain the significance of specific	Relation and Function in real life give us the	* Exercise Questions &

		Cartesian product of two sets Relations Types of relations		arrangement of elements in a pair ● Write Cartesian product of two sets ● Find the number of elements in a Cartesian product of two sets ● Explain the significance of specific arrangement of elements in a pair ● Write Cartesian product of two sets ● Find the number of elements in a Cartesian product of two sets ● Define and illustrate different types	link between any two entities. In our daily life, we come across many patterns and links that characterize relations such as a relation of a father and a son, brother and sister, etc.	Answers to be assessed * Questions from other reference books will be done * MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions

				of relations: Empty relation and universal relation ● Examine whether the relation is equivalence or not ● Define function as a special type of relation ● Categorize relations that are functions and non-functions		
MAY	09	**Calculus** Functions Domain and Range of a function Types of functions Graphical representation of functions		● Identify dependent and independent variables ● Define a function using dependent and independent variable ● Define domain, range and co-domain of a given function	Understand the concept of a function as a relation between inputs and outputs. Identify functions from equations, tables, graphs, and verbal descriptions. Evaluate functions for	* Exercise Questions & Answers to be assessed * Questions from other reference books will be done * MCQ based Questions will be asked

				● Define various types of functions ● Identify domain, co-domain and range of the function ● Representation of function graphically	given inputs and determine corresponding outputs. Define and determine the domain and range of a function. Familiarize with function notation $f(x)$ and its significance. Apply functions to real-world situations in science, economics, and engineering. Develop problem-solving skills through solving mathematical problems involving functions.	* Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions

JUNE	11	**Calculus** Concepts of limits and continuity of a function Instantaneous rate of change Differentiation as a process of finding derivative Derivatives of algebraic functions using Chain Rule		● Define limit of a function ● Solve problems based on the algebra of limits ● Define continuity of a function ● Define instantaneous rate of change ● Find the derivative of the functions ● Find the derivative of function of a function	Define limits and their notation. Analyze functions' behavior as they approach specific values or infinity. Calculate limits using algebraic, graphical, and limit laws methods. Define derivatives and their notation. Apply derivative rules like the power, product, quotient, and chain rules. Utilize derivative rules to find derivatives of various functions and expressions.	* Exercise Questions & Answers to be assessed * Questions from other reference books will be done * MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions
		Logical reasoning		● Solve logical problems	The concepts of reasoning not	* Exercise Questions &

				involving odd man out, syllogism, blood relation and coding decoding	only helps the students to have a deeper understanding of the subject but also helps in having a wider perspective to logical statements.	Answers to be assessed * Questions from other reference books will be done * MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions
JULY	26	**Sequences and Series** Sequence and Series Arithmetic Progression Geometric Progression Applications of AP and GP	Fibonacci sequence: Its' history and presence in nature	● Differentiate between sequence and series ● Identify Arithmetic Progression (AP) ● Establish the formulae of finding nth term and sum of n terms	Students creative thinking skills in solving two dimensional arithmetic series through research based learning.	* Exercise Questions & Answers to be assessed * Questions from other reference books will be done

				● Solve application problems based on AP ● Find arithmetic mean (AM) of two positive numbers ● Identify Geometric Progression (GP) ● Derive the nth term and sum of n terms of a given GP ● Solve problems based on applications of GP ● Find geometric mean (GM) of two positive numbers ● Solve problems based on relation between AM and GM ● Apply appropriate		* MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions

				formulas of AP and GP to solve application problems		
		Permutations and Combinations Factorial Fundamental Principle of Counting Permutations Combinations	Analysis of career graph of a cricketer (batting average for a batsman and bowling average for a bowler). Conclude the best year of his career. It may be extended for other players also – tennis, badminton, athlete	● Define factorial of a number ● Calculate factorial of a number ● Appreciate how to count without counting ● Define permutation ● Apply the concept of permutation to solve simple problems ● Define combination ● Differentiate between permutation and combination ● Apply the formula of combination to	Arranging people, digits, numbers, alphabets, letters, and colours are examples of permutations. Selection of menu, food, clothes, subjects, the team are examples of combinations.	* Exercise Questions & Answers to be assessed * Questions from other reference books will be done * MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions

				solve the related problems		
AUGUST	24	**Numbers & Quantification** Binary Numbers Indices, Logarithm and Antilogarithm Laws and properties of logarithms Simple applications of logarithm and antilogarithm	Logarithms for financial calculations such as interest, present value, future value, profit/loss etc. with large values)	● Express decimal numbers in binary system ● Express binary numbers in decimal system ● Relate indices and logarithm /antilogarithm ● Find logarithm and antilogarithms of given number ● Enlist the laws and properties of logarithms ● Apply laws of logarithm ● Use logarithm in different applications	Reasoning Skills Critical Thinking Skills Decision Making Skills	* Exercise Questions & Answers to be assessed * Questions from other reference books will be done * MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions
		Numerical Applications Averages	Comparing sets of Natural numbers, rational numbers, real numbers and others	● Determine average for a given data	Identify & Measure the Surface Area &	* Exercise Questions &

		Clock Calendar Time, Work and Distance Mensuration Seating arrangement		● Evaluate the angular value of a minute ● Calculate the angle formed between two hands of clock at given time ● Calculate the time for which hands of clock meet ● Determine Odd days in a month/ year/ century ● Decode the day for the given date ● Establish the relationship between work and time ● Compare the work done by the individual / group w.r.t. time ● Calculate the time taken/ distance covered/ Work	Volume of 2D & 3D Shapes	Answers to be assessed * Questions from other reference books will be done * MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions

				done from the given data ● Solve problems based on surface area and volume of 2D and 3D shapes ● Calculate the volume/ surface area for solid formed using two or more shapes ● Create suitable seating plan/ draft as per given conditions (Linear/circular) ● Locate the position of a person in a seating arrangement		
SEPTEMBER	21	**Revision & Half Yearly Exam**				
OCTOBER	18	**Descriptive Statistics** Types of data	Prepare a questionnaire to	●Identify real life situations	Statistics skills are capabilities and competency	* Exercise Questions &

		Data on various scales Data representation and data visualization	collect information about money spent by your friends in a month on activities like travelling, movies, recharging of the mobiles, etc. and draw interesting conclusions	for collecting data ● Categorize data based on nature of data (Primary and Secondary Data, Raw and Organized Data) ● Identify and differentiate univariate, bivariate and multi-variate data ● Identify and differentiate discrete data and continuous data ● Collect raw data from practical examples ● Describe nominal, ordinal, interval and ratio scale of data collection ● Collect and classify data on	traits that allow someone to use statistics in order to gauge the probability of a particular outcome. Statistics are generally a combination of several qualifying traits, including math, computer literacy, data analysis and critical thinking.	Answers to be assessed * Questions from other reference books will be done * MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions

				different scales of measurement ● Organize raw data in discrete and continuous form ● Represent data on nominal and ordinal scales of measurement using pie chart and bar graphs ● Represent data on interval and ratio scale using histogram and frequency polygon ● Represent bivariate continuous data using line graph ● Choose appropriate graph to represent data of various kinds		
		Data Interpretation Measure of Dispersion Skewness and Kurtosis	Each day newspaper tells us about the maximum temperature, minimum temperature, and	● Understand meaning of dispersion in a data set		* Exercise Questions & Answers to be assessed

		Percentile rank and Quartile rank Correlation	humidity. Collect the data for a period of 30 days and represent it graphically. Compare it with the data available for the same time period for the previous year.	● Differentiate between range, quartile deviation, mean deviation and standard deviation ● Calculate range, quartile deviation, mean deviation and standard deviation for ungrouped and grouped data set ● Choose appropriate measure of dispersion to calculate spread of data ● Define Skewness and Kurtosis using graphical representation of a data set ● Interpret Skewness and Kurtosis of a frequency distribution by plotting the graph		* Questions from other reference books will be done * MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions

				● Calculate coefficient of Skewness and interpret the results ● Define Percentile rank and Quartile rank ● Calculate and interpret Percentile and Quartile rank of scores in a given data set ● Define correlation in values of two data sets ● Calculate Product moment correlation for ungrouped and grouped data ● Calculate Karl Pearson's coefficient of correlation ● Calculate Spearman's rank correlation		

				● Interpret the coefficient of correlation.		
NOVEMBER	23	**Probability** Introduction Random experiment and sample space Event Conditional Probability Total Probability Bayes' Theorem	Collect the data on weather, price, inflation, and pollution. Sketch different types of graphs and analyse the results	● Appreciate the use of probability in daily life situations ● Define random experiment and sample space with suitable examples ● Define an event ● Recognize and differentiate different types of events and find their probabilities ● Define the concept of conditional probability ● Apply reasoning skills to solve problems based on conditional probability	It is used in analysing games of chance, genetics, weather prediction, and a myriad of other everyday events. Statistics is the mathematics we use to collect, organize, and interpret numerical data.	* Exercise Questions & Answers to be assessed * Questions from other reference books will be done * MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions

				● Interpret mathematical information and identify situations when to apply total probability ● Solve problems based on application of total probability ● State Bayes' theorem ● Solve practical problems based on Bayes' Theorem.		
DECEMBER	19	**Coordinate Geometry** Straight line	Plot the graph of functions on excel study the nature of function at various points, drawing lines of tangents.	● Find the slope and equation of line in various form ● Find angle between the two lines ● Find the perpendicular from a given point on a line ● Find the distance between two parallel lines	Studying geometry provides many foundational skills and helps to build the thinking skills of logic, deductive reasoning, analytical reasoning, and problem-solving.	* Exercise Questions & Answers to be assessed * Questions from other reference books will be done * MCQ based Questions will be asked

		Circle Parabola		● Define a circle ● Find different form of equations of a circle ● Solve problems based on applications of circle ● Define parabola and related terms ● Define eccentricity of a parabola ● Derive the equation of parabola		* Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions
JANUARY	22	**Financial Mathematics** Interest and Interest Rates Accumulation with simple and compound interest Simple and compound interest rates with equivalency Effective rate of interest	Create a budget of income and spending Create and compare sheet of price & features to buy a product	● Define the concept of Interest Rates ● Compare the difference between Nominal Interest Rate, Effective Rate and Real Interest Rate	Financial Math offers an engaging, scaffolded curriculum that introduces key topics and principles necessary to financial literacy. The one-semester	* Exercise Questions & Answers to be assessed * Questions from other reference books will be done

		Present value, net present value and future value Annuities, Calculating value of Regular Annuity Simple applications of regular annuities (upto 3 period) Tax, calculation of tax, simple applications of tax calculation in Goods and service tax, Income Tax Bills, tariff rates, fixed charge, surcharge, service charge Calculation and interpretation of electricity bill, water supply bill and other supply bills	Prepare the best option plan to buy a product by comparing cost, shipping charges, tax and other hidden costs Prepare a report card using scores of the last four exams and compare the performance	● Solve Practical applications of interest rate ● Interpret the concept of simple and compound interest ● Calculate Simple Interest and Compound Interest ● Explain the meaning, nature and concept of equivalency ● Analyse various examples for understanding annual equivalency rate ● Define with examples the concept of effective rate of interest ● Interpret the concept of compounding and discounting along with	course covers earning and spending; savings and investing; credit and debt; protection of assets; and financial planning and decision-making.	* MCQ based Questions will be asked * Short & Long type questions will be asked * Case study-based questions * Assertion Reason Questions

				practical applications ● Compute net present value ● Apply net present value in capital budgeting decisions ● Explain the concept of Immediate Annuity, Annuity due and Deferred Annuity ● Calculate General Annuity ● Calculate the future value of regular annuity, annuity due ● Apply the concept of Annuity in real life situations ● Explain fundamentals of taxation ● Differentiate between Direct and indirect tax		

				● Define and explain GST ● Calculate GST ● Explain rules under State Goods and Services Tax (SGST) Central Goods and Services Tax (CGST) and Union Territory Goods and Services Tax (UTGST) ● Describe the meaning of bills and its various types ● Analyse the meaning and rules determining tariff rates ● Explain the concept of fixed charge ● To interpret and analyze electricity bills, water bills and other supply bills		

				● Evaluate how to calculate units consumed under electricity bills/water bill		
FEBRUARY	22	**Revision & Annual Exam**				

Subject Teacher : AMIT KUMAR MAHAPATRA **Principal**