



**SANT NANDLAL SMRITI VIDYA MANDIR, GHATSILA**  
**YEARLY SYLLABUS OF APPLIED MATHEMATICS**  
**SESSION – 2026-2027**  
**STD – XI Commerce**



MONTH	NO. OF CLASSES	TOPIC TO BE TAUGHT	ACTIVITY	LEARNING OUTCOME	VALUES & SKILLS IMPARTED	ASSESSMENT
APRIL	23	<b>Sets</b>  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	<b>Students will be able to:</b> <ul style="list-style-type: none"><li>● Define set as well-defined collection of objects</li><li>● Represent a set in Roster form and Set builder form</li><li>● Identify different types of sets on the basis of number of elements in the set</li><li>● Differentiate between equal set and equivalence set</li><li>● Enlist all subsets of a set</li><li>● Find number of subsets of a given set</li><li>● Find number of elements of a power set</li></ul>	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

				<ul style="list-style-type: none"> <li>● Express subset of real numbers as intervals</li> <li>● Apply the concept of Venn diagram to understand the relationship between sets</li> <li>● Solve problems using Venn diagram</li> <li>● Perform operations on sets to solve practical problems</li> </ul>		
		<p><b>Relations</b></p> <p>Ordered pairs</p> <p>Cartesian product of two sets</p> <p>Relations</p> <p>Types of relations</p>		<ul style="list-style-type: none"> <li>● Explain the significance of specific arrangement of elements in a pair</li> <li>● Write Cartesian product of two sets</li> <li>● Find the number of elements in a Cartesian product of two sets</li> <li>● Explain the significance of specific arrangement of elements in a pair</li> <li>● Write Cartesian product of two sets</li> <li>● Find the number of elements in a Cartesian product of two sets</li> <li>● Define and illustrate different types of</li> </ul>	<p>Relation and Function in real life give us the 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.</p>	<p>* Exercise Questions &amp; Answers to be assessed</p> <p>* Questions from other reference books will be done</p> <p>* MCQ based Questions will be asked</p> <p>* Short &amp; Long type questions will be asked</p> <p>* Case study-based questions</p>

				<p>relations: Empty relation and universal relation</p> <ul style="list-style-type: none"> <li>● Examine whether the relation is equivalence or not</li> <li>● Define function as a special type of relation</li> <li>● Categorize relations that are functions and non-functions</li> </ul>		* Assertion Reason Questions
<b>MAY</b>	08	<p><b>Calculus</b></p> <p>Functions</p> <p>Domain and Range of a function</p> <p>Types of functions</p> <p>Graphical representation of functions</p>		<ul style="list-style-type: none"> <li>● Identify dependent and independent variables</li> <li>● Define a function using dependent and independent variable</li> <li>● Define domain, range and co-domain of a given function</li> <li>● Define various types of functions</li> <li>● Identify domain, co-domain and range of the function</li> <li>● Representation of function graphically</li> </ul>	<p>Understand the concept of a function as a relation between inputs and outputs.</p> <p>Identify functions from equations, tables, graphs, and verbal descriptions.</p> <p>Evaluate functions for given inputs and determine corresponding outputs.</p> <p>Define and determine the domain and range of a function.</p> <p>Familiarize with function notation <math>f(x)</math> and its significance.</p>	<p>* Exercise Questions &amp; Answers to be assessed</p> <p>* Questions from other reference books will be done</p> <p>* MCQ based Questions will be asked</p> <p>* Short &amp; Long type questions will be asked</p> <p>* Case study-based questions</p> <p>* Assertion Reason Questions</p>

					<p>Apply functions to real-world situations in science, economics, and engineering.</p> <p>Develop problem-solving skills through solving mathematical problems involving functions.</p>	
<b>JUNE</b>	11	<p><b>Calculus</b></p> <p>Concepts of limits and continuity of a function</p> <p>Instantaneous rate of change</p> <p>Differentiation as a process of finding derivative</p> <p>Derivatives of algebraic functions using Chain Rule</p>		<ul style="list-style-type: none"> <li>● Define limit of a function</li> <li>● Solve problems based on the algebra of limits</li> <li>● Define continuity of a function</li> <li>● Define instantaneous rate of change</li> <li>● Find the derivative of the functions</li>   <li>● Find the derivative of function of a function</li> </ul>	<p>Define limits and their notation. Analyze functions' behavior as they approach specific values or infinity. Calculate limits using algebraic, graphical, and limit laws methods.</p> <p>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.</p>	<p>* Exercise Questions &amp; Answers to be assessed</p> <p>* Questions from other reference books will be done</p> <p>* MCQ based Questions will be asked</p> <p>* Short &amp; Long type questions will be asked</p> <p>* Case study-based questions</p> <p>* Assertion Reason Questions</p>

		Logical reasoning		<ul style="list-style-type: none"> <li>● Solve logical problems involving odd man out, syllogism, blood relation and coding decoding</li> </ul>	The concepts of reasoning not only helps the students to have a deeper understanding of the subject but also helps in having a wider perspective to logical statements.	<ul style="list-style-type: none"> <li>* Exercise Questions &amp; Answers to be assessed</li> <li>* Questions from other reference books will be done</li> <li>* MCQ based Questions will be asked</li> <li>* Short &amp; Long type questions will be asked</li> <li>* Case study-based questions</li> <li>* Assertion Reason Questions</li> </ul>
<b>JULY</b>	26	<b>Sequences and Series</b>  Sequence and Series  Arithmetic Progression  Geometric Progression	Fibonacci sequence: Its' history and presence in nature	<ul style="list-style-type: none"> <li>● Differentiate between sequence and series</li> <li>● Identify Arithmetic Progression (AP)</li> <li>● Establish the formulae of finding <math>n</math>th term and sum of <math>n</math> terms</li> <li>● Solve application problems based on AP</li> <li>● Find arithmetic mean (AM) of two positive numbers</li> </ul>	Students creative thinking skills in solving two dimensional arithmetic series through research based learning.	<ul style="list-style-type: none"> <li>* Exercise Questions &amp; Answers to be assessed</li> <li>* Questions from other reference books will be done</li> </ul>

		Applications of AP and GP		<ul style="list-style-type: none"> <li>● Identify Geometric Progression (GP)</li> <li>● Derive the <math>n</math>th term and sum of <math>n</math> terms of a given GP</li> <li>● Solve problems based on applications of GP</li> <li>● Find geometric mean (GM) of two positive numbers</li> <li>● Solve problems based on relation between AM and GM</li> <li>● Apply appropriate formulas of AP and GP to solve application problems</li> </ul>		<p>* MCQ based Questions will be asked</p> <p>* Short &amp; Long type questions will be asked</p> <p>* Case study-based questions</p> <p>* Assertion Reason Questions</p>
		<p><b>Permutations and Combinations</b></p> <p>Factorial</p> <p>Fundamental Principle of Counting</p> <p>Permutations</p> <p>Combinations</p>	<p>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,</p>	<ul style="list-style-type: none"> <li>● Define factorial of a number</li> <li>● Calculate factorial of a number</li> <li>● Appreciate how to count without counting</li> <li>● Define permutation</li> <li>● Apply the concept of permutation to solve simple problems</li> <li>● Define combination</li> <li>● Differentiate between permutation and combination</li> </ul>	<p>Arranging people, digits, numbers, alphabets, letters, and colours are examples of permutations. Selection of menu, food, clothes, subjects, the team are examples of combinations.</p>	<p>* Exercise Questions &amp; Answers to be assessed</p> <p>* Questions from other reference books will be done</p> <p>* MCQ based Questions will be asked</p> <p>* Short &amp; Long type questions will be asked</p>

			badminton, athlete	<ul style="list-style-type: none"> <li>● Apply the formula of combination to solve the related problems</li> </ul>		<ul style="list-style-type: none"> <li>* Case study-based questions</li> <li>* Assertion Reason Questions</li> </ul>
<b>AUGUST</b>	23	<b>Numbers &amp; Quantification</b>  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)	<ul style="list-style-type: none"> <li>● Express decimal numbers in binary system</li> <li>● Express binary numbers in decimal system</li> <li>● Relate indices and logarithm /antilogarithm</li> <li>● Find logarithm and antilogarithms of given number</li> <li>● Enlist the laws and properties of logarithms</li> <li>● Apply laws of logarithm</li> <li>● Use logarithm in different applications</li> </ul>	Reasoning Skills  Critical Thinking Skills  Decision Making Skills	<ul style="list-style-type: none"> <li>* Exercise Questions &amp; Answers to be assessed</li> <li>* Questions from other reference books will be done</li> <li>* MCQ based Questions will be asked</li> <li>* Short &amp; Long type questions will be asked</li> <li>* Case study-based questions</li> <li>* Assertion Reason Questions</li> </ul>
		<b>Numerical Applications</b>  Averages  Clock  Calendar	Comparing sets of Natural numbers, rational numbers, real numbers and others	<ul style="list-style-type: none"> <li>● Determine average for a given data</li> <li>● Evaluate the angular value of a minute</li> <li>● Calculate the angle formed between two</li> </ul>	Identify & Measure the Surface Area & Volume of 2D & 3D Shapes	<ul style="list-style-type: none"> <li>* Exercise Questions &amp; Answers to be assessed</li> <li>* Questions from other reference books will be done</li> </ul>

		<p>Time, Work and Distance</p> <p>Mensuration</p> <p>Seating arrangement</p>	<p>hands of clock at given time</p> <ul style="list-style-type: none"> <li>● Calculate the time for which hands of clock meet</li> <li>● Determine Odd days in a month/ year/ century</li> <li>● Decode the day for the given date</li> <li>● Establish the relationship between work and time</li> <li>● Compare the work done by the individual / group w.r.t. time</li> <li>● Calculate the time taken/ distance covered/ Work done from the given data</li> <li>● Solve problems based on surface area and volume of 2D and 3D shapes</li> <li>● Calculate the volume/ surface area for solid formed using two or more shapes</li> <li>● Create suitable seating plan/ draft as per given conditions (Linear/circular)</li> </ul>		<p>* MCQ based Questions will be asked</p> <p>* Short &amp; Long type questions will be asked</p> <p>* Case study-based questions</p> <p>* Assertion Reason Questions</p>
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				<ul style="list-style-type: none"> <li>● Locate the position of a person in a seating arrangement</li> </ul>		
<b>SEPTEMBER</b>	23	<b>Revision &amp; Half Yearly Exam</b>				
<b>OCTOBER</b>	16	<b>Descriptive Statistics</b>  Types of data  Data on various scales  Data representation and data visualization	Prepare a questionnaire to 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	<ul style="list-style-type: none"> <li>● Identify real life situations for collecting data</li> <li>● Categorize data based on nature of data (Primary and Secondary Data, Raw and Organized Data)</li> <li>● Identify and differentiate univariate, bivariate and multi-variate data</li> <li>● Identify and differentiate discrete data and continuous data</li> <li>● Collect raw data from practical examples</li> <li>● Describe nominal, ordinal, interval and ratio scale of data collection</li> <li>● Collect and classify data on different scales of measurement</li> <li>● Organize raw data in discrete and continuous form</li> <li>● Represent data on nominal and ordinal scales</li> </ul>	Statistics skills are capabilities and competency 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.	<ul style="list-style-type: none"> <li>* Exercise Questions &amp; Answers to be assessed</li> <li>* Questions from other reference books will be done</li> <li>* MCQ based Questions will be asked</li> <li>* Short &amp; Long type questions will be asked</li> <li>* Case study-based questions</li> <li>* Assertion Reason Questions</li> </ul>

				<p>of measurement using pie chart and bar graphs</p> <ul style="list-style-type: none"> <li>● Represent data on interval and ratio scale using histogram and frequency polygon</li> <li>● Represent bivariate continuous data using line graph</li> <li>● Choose appropriate graph to represent data of various kinds</li> </ul>		
		<p><b>Data Interpretation</b></p> <p>Measure of Dispersion</p> <p>Skewness and Kurtosis</p> <p>Percentile rank and Quartile rank</p> <p>Correlation</p>	<p>Each day newspaper tells us about the maximum temperature, minimum temperature, and 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.</p>	<ul style="list-style-type: none"> <li>● Understand meaning of dispersion in a data set</li> <li>● Differentiate between range, quartile deviation, mean deviation and standard deviation</li> <li>● Calculate range, quartile deviation, mean deviation and standard deviation for ungrouped and grouped data set</li> <li>● Choose appropriate measure of dispersion to calculate spread of data</li> <li>● Define Skewness and Kurtosis using graphical representation of a data set</li> <li>● Interpret Skewness and Kurtosis of a frequency distribution by plotting the graph</li> </ul>		<p>* Exercise Questions &amp; Answers to be assessed</p> <p>* Questions from other reference books will be done</p> <p>* MCQ based Questions will be asked</p> <p>* Short &amp; Long type questions will be asked</p> <p>* Case study-based questions</p> <p>* Assertion Reason Questions</p>

				<ul style="list-style-type: none"> <li>● Calculate coefficient of Skewness and interpret the results</li> <li>● Define Percentile rank and Quartile rank</li> <li>● Calculate and interpret Percentile and Quartile rank of scores in a given data set</li> <li>● Define correlation in values of two data sets</li> <li>● Calculate Product moment correlation for ungrouped and grouped data</li> <li>● Calculate Karl Pearson's coefficient of correlation</li> <li>● Calculate Spearman's rank correlation</li> <li>● Interpret the coefficient of correlation.</li> </ul>		
<b>NOVEMBER</b>	19	<b>Probability</b>  Introduction  Random experiment and sample space  Event  Conditional Probability	Collect the data on weather, price, inflation, and pollution. Sketch different types of graphs and analyse the results	<ul style="list-style-type: none"> <li>● Appreciate the use of probability in daily life situations</li> <li>● Define random experiment and sample space with suitable examples</li> <li>● Define an event</li> <li>● Recognize and differentiate different types of events and find their probabilities</li> </ul>	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

		<p>Total Probability</p> <p>Bayes' Theorem</p>		<ul style="list-style-type: none"> <li>● Define the concept of conditional probability</li> <li>● Apply reasoning skills to solve problems based on conditional probability</li> <li>● Interpret mathematical information and identify situations when to apply total probability</li> <li>● Solve problems based on application of total probability</li> <li>● State Bayes' theorem</li> <li>● Solve practical problems based on Bayes' Theorem.</li> </ul>		<p>* Short &amp; Long type questions will be asked</p> <p>* Case study-based questions</p> <p>* Assertion Reason Questions</p>
<b>DECEMBER</b>	19	<p><b>Coordinate Geometry</b></p> <p>Straight line</p> <p>Circle</p>	<p>Plot the graph of functions on excel study the nature of function at various points, drawing lines of tangents.</p>	<ul style="list-style-type: none"> <li>● Find the slope and equation of line in various form</li> <li>● Find angle between the two lines</li> <li>● Find the perpendicular from a given point on a line</li> <li>● Find the distance between two parallel lines</li> <li>● Define a circle</li> <li>● Find different form of equations of a circle</li> <li>● Solve problems based on applications of circle</li> </ul>	<p>Studying geometry provides many foundational skills and helps to build the thinking skills of logic, deductive reasoning, analytical reasoning, and problem-solving.</p>	<p>* Exercise Questions &amp; Answers to be assessed</p> <p>* Questions from other reference books will be done</p> <p>* MCQ based Questions will be asked</p> <p>* Short &amp; Long type questions will be asked</p>

		Parabola		<ul style="list-style-type: none"> <li>● Define parabola and related terms</li> <li>● Define eccentricity of a parabola</li> <li>● Derive the equation of parabola</li> </ul>		<ul style="list-style-type: none"> <li>* Case study-based questions</li> <li>* Assertion Reason Questions</li> </ul>
<b>JANUARY</b>	20	<b>Financial Mathematics</b>  Interest and Interest Rates  Accumulation with simple and compound interest  Simple and compound interest rates with equivalency  Effective rate of interest  Present value, net present value and future value  Annuities, Calculating value of Regular Annuity	Create a budget of income and spending  Create and compare sheet of price & features to buy a product  Prepare the best option plan to buy a product by comparing cost, shipping charges, tax and other hidden costs	<ul style="list-style-type: none"> <li>● Define the concept of Interest Rates</li> <li>● Compare the difference between Nominal Interest Rate, Effective Rate and Real Interest Rate</li> <li>● Solve Practical applications of interest rate</li> <li>● Interpret the concept of simple and compound interest</li> <li>● Calculate Simple Interest and Compound Interest</li> <li>● Explain the meaning, nature and concept of equivalency</li> <li>● Analyse various examples for understanding annual equivalency rate</li> <li>● Define with examples the concept of effective rate of interest</li> </ul>	Financial Math offers an engaging, scaffolded curriculum that introduces key topics and principles necessary to financial literacy. The one-semester course covers earning and spending; savings and investing; credit and debt; protection of assets; and financial planning and decision-making.	<ul style="list-style-type: none"> <li>* Exercise Questions &amp; Answers to be assessed</li> <li>* Questions from other reference books will be done</li> <li>* MCQ based Questions will be asked</li> <li>* Short &amp; Long type questions will be asked</li> <li>* Case study-based questions</li> <li>* Assertion Reason Questions</li> </ul>

		<p>Simple applications of regular annuities (upto 3 period)</p> <p>Tax, calculation of tax, simple applications of tax calculation in Goods and service tax, Income Tax</p> <p>Bills, tariff rates, fixed charge, surcharge, service charge</p> <p>Calculation and interpretation of electricity bill, water supply bill and other supply bills</p>	<p>Prepare a report card using scores of the last four exams and compare the performance</p>	<ul style="list-style-type: none"> <li>● Interpret the concept of compounding and discounting along with practical applications</li> <li>● Compute net present value</li> <li>● Apply net present value in capital budgeting decisions</li> <li>● Explain the concept of Immediate Annuity, Annuity due and Deferred Annuity</li> <li>● Calculate General Annuity</li> <li>● Calculate the future value of regular annuity, annuity due</li> <li>● Apply the concept of Annuity in real life situations</li> <li>● Explain fundamentals of taxation</li> <li>● Differentiate between Direct and indirect tax</li> <li>● Define and explain GST</li> <li>● Calculate GST</li> <li>● Explain rules under State Goods and Services Tax (SGST) Central Goods and Services Tax (CGST) and Union</li> </ul>		
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				<p>Territory Goods and Services Tax (UTGST)</p> <ul style="list-style-type: none"> <li>● Describe the meaning of bills and its various types</li> <li>● Analyse the meaning and rules determining tariff rates</li> <li>● Explain the concept of fixed charge</li> <li>● To interpret and analyze electricity bills, water bills and other supply bills</li> <li>● Evaluate how to calculate units consumed under electricity bills/water bill</li> </ul>		
<b>FEBRUARY</b>	23	<b>Revision &amp; Annual Exam</b>				

**Subject Teacher : AMIT KUMAR MAHAPATRA**

**Principal**