CHOITHRAM SCHOOL, MANIK BAGH, INDORE
ANNUAL CURRICULUM PLAN SESSION 2020-21

CLASS: XI
SUBJECT: Mathematics (Applied Mathematics)

Month & Working Days	Theme/ Sub-theme	Learning Objectives		Activities &Resources	Expected Learning Outcomes	Assessment
		Subject Specific (Content Based)	**Behavioural (Application based)**			
May 9 Days + June 11 days **(20)**	**Numbers, Quantification and Numerical Applications**	Students will be able to: 1) Understand about prime numbers 2) Learn how to encrypt data using prime numbers 3) Understand the concept of binary numbers a) How it is different from Decimal Number System b) Conversion of decimal number to binary number and vice – versa c) Conversion of fractional numbers from decimal number to binary and vice – versa d) Binary addition e) Binary subtraction 4) Understand about Indices, Logarithms and Anti – logarithms a) Laws and properties of logarithms b) Simple applications of logarithm and antilogarithm 5) Solve numerical problems on: a) Averages b) Calendar c) Clock d) Work, Time and Distance	**They will be able to:** 1. Calculate 'numbers having power' without using calculator by using concept of logarithm and anti – logarithm 2. Find averages (own percentage, run rate of cricket match etc) 3. Find 'specific day' with the help of given date without using calendar 4. Calculate work, time and distance by using formulas which helps in preventing them by being cheated 5. Calculate area of wall, floor, cricket field, etc with the help of formulas	**Video will be shown to students**	**Students would be able to:** 1) Understand about prime numbers 2) Learn how to encrypt data using prime numbers 3) Understand the concept of binary numbers a) How it is different from Decimal Number System b) Conversion of decimal number to binary number and vice – versa c) Conversion of fractional numbers from decimal number to binary and vice – versa d) Binary addition e) Binary subtraction 4) Understand about Indices, Logarithms and Anti – logarithms a) Laws and properties of logarithms b) Simple applications of logarithm and antilogarithm 5) Solve numerical problems on: a) Averages b) Calendar c) Clock d) Work, Time and Distance e) Mensuration	**Question will be given and assessment will be on decided rubrics**

		e) Mensuration
		f) Seating arrangement
					f) Seating arrangement
					6). Calculate 'numbers having power' without using calculator by using concept of
					    logarithm and anti – logarithm
					7). Find averages (own percentage, run rate of cricket match etc)
					8). Find 'specific day' with the help of given date without using calendar
					9). Calculate work, time and distance by using formulas which helps in preventing them
					    by being cheated
					10. Calculate area of wall, floor, cricket field, etc with the help of formulas	

June 6 days **+** **July 26 Days** **35**	**Algebra**	Students will be able to understand following concepts: 1) Set Theory a) Types of Sets b) Venn diagram's c) De Morgan's law d) Problem solving using Venn diagram 2) Relation a) Ordered pair b) Cartesian Product c) Introduction to Relation d) Types of relations 3) Sequence and Series a) Introduction to Sequence and Series b) Arithmetic progression c) Geometric Progression d) Relation between AM and GM 4) Permutation and Combination a) Basic concept ofPermutation b) Circular permutation c) Permutation with restrictions d) Basic concept of Combination	1. As a 'natural ability of abstraction', students often speak of collection of things as a single entity, "the Detroit Lions", "the Solar system" 2. School bags of children are also related with Set theory. There are usually divisions in the school bags, where the sets of notebooks and textbooks are kept separately 3. Shopping mall is other example of Set theory, as there are separate portions for each kind of things. For instances, clothing shops are on another floor whereas the food court is at another part of the mall. 4. Combinations of	Students will be asked to explain cartesian products studied in X Set A and **B** will be listed on the board.**A** = red,blue}and **B** = {b, c, s}, where b, c and s represent a particular bag, coat andShirt then following question will be floated in the class.	1) Set Theory a) Types of Sets b) Venn diagram's c) De Morgan's law d) Problem solving using Venn diagram 2) Relation a) Ordered pair b) Cartesian Product c) Introduction to Relation d) Types of relations 3) Sequence and Series a) Introduction to Sequence and Ser b) Arithmetic progression c) Geometric Progression d) Relation between AM and GM 4) Permutation and Combination a) Basic concept of Permutation b) Circular permutation c) Permutation with restrictions d) Basic concept of Combination e) Combinations with standard results 2)As a 'natural ability of abstraction', students often	**Question will be given and assessment will be on decided rubrics**

		e) Combinations with standard results	password of their mobile phones	1)How many pairs of coloured objects can be made from these two sets?	speak of collection of things as a single entity, "the Detroit Lions", "the Solar system"	
			By understanding the concept and solving variety of problems, students will attain following behavioral objectives: **They will be able to:** 1. Use concept of Set theory in Data Structure and Topology (Subject in Computers) 2. Find number of students who've opted for specific sport, club activity 3. Calculate specific number of item (like TV, Car, Freeze etc) sold from total sold items 4. Calculate total amount to be paid to cab driver after completion of journey 5. Calculate total number of seating arrangements in van/bus/class 6. Do mapping with particular people with the help of any relation between them	2)(red, b), (red, c), (red, s), (blue, b), (blue, c), (blue, s). {6 distinct} 3)Then definition of relation will be given two non-empty sets p and q.	3). School bags of children are also related with Set theory. There are usually divisions in the school bags, where the sets of notebooks and textbooks are kept separately 4). Shopping mall is other example of Set theory, as there are separate portions for each kind of things. For instances, clothing shops are on another floor whereas the food court is at another part of the mall. 5). Combinations of password of their mobile phonesBy understanding the concept and solving variety of problems, students will attain following behavioral objectives: **They will be able to:** 1. Use concept of Set theory in Data Structure and Topology (Subject in Computers) 2. Find number of students who've opted for specific sport, club activity 3. Calculate specific number of item (like TV, Car, Freeze etc) sold from total sold items 4. Calculate total amount to be paid to cab driver after completion of journey 5. Calculate total number of seating arrangements in van/bus/class 6. Do mapping with particular people with the help of any relation between them	

August 20 days **20**	**Coordinate Geometry**	To enable the students to understand and apply: 1. Concept of Straight Line and its 2. Graphical representation in two-dimensional Plane 3. Concept of Circles 4. Graphical representation ofCircles in two-dimensional Plane 5. Concept of Parabola 6. Graphical representationofParabola in two-dimensional plane	Students will be able to develop 1)Imagination skill 2)Creativity 3) Appreciate different approach for plane geometry While studying various structures	Students will be asked to derive equation of circle by coordinate of a fixed point and a general point	Students would be able 1. Concept of Straight Line and its 2. Graphical representation in two-dimensional Plane 3. Concept of Circles 4. Graphical representation ofCircles in two-dimensional Plane 5. Concept of Parabola 6. Graphical representationofParabola in two-dimensional plane 7. develop Imagination skill & Creativity 8. Appreciate different approach for plane geometry	**assess ment will be on decide d rubrics**
Septe mber 10 days **10**	**Mathematic al and Logical Reasoning**	Students will be able to understand following concepts: 1) Statements a) New statements from old b) Negation of a statement c) Compound Statement 2) Special word phrases a) The word "AND" b) The word "OR" 3) Quantifiers 4) Implications 5) Contra positive and converse 6) Validating statements 7) By contradiction 8) Logical reasoning a) Coding - Decoding b) Odd man out c) Blood relation d) Syllogism	**They will be able to:** 1).Form of 'New statements from old statements' 2).Form 'Compound statements' 3).Use words like "AND" and "OR" in appropriate place/statements 4).Prove things by using contradiction approach 5).Code and Decode messages/puzzles 6)Relate themselves with their own family members (or far away relations) using concept of Blood relations	**PPT will be shown to students**	**Students would be able to understand concept of:** 1) Statements a) New statements from old b) Negation of a statement c) Compound Statement 2) Special word phrases a) The word "AND"b) The word "OR" 3) Quantifiers 4) Implications 5) Contra positive and converse 6) Validating statements 7) By contradiction 8) Logical reasoning a) Coding – Decodingb) Odd man out c) Blood relationd) Syllogism 9)Form 'New statements from old statements' 10)Form 'Compound statements' 11)Use words like "AND" and "OR" in appropriate place/statements 12)Prove things by using contradiction approach 13)Code and Decode messages/puzzles 14)Relate themselves with their own family members	**Questi on will be given and assess ment will be on decide d rubrics**

					(or far away relations) using concept of Blood relations	
September 14 days + October 16 days **30**	**Calculus**	To enable the students to understand and apply: 1.Introduction of functions 2. Domain and Range of a function 3.Types of functions (Polynomial function; Rational function; Composite function; Logarithm function; Exponential function; Modulus function; Greatest Integer function, Signum function) 4. Graphical representation of functions 5. Concept of limits and continuity of a function 6. Instantaneous rates of change 7.Differentiation as a process of finding derivative 8.Derivatives of algebraic functions using Chain rule 9.Tangent line and equations of tangents	students will be able to develop 1)Visualization of functions 2)Approach for solving daily life problems	Differentiation concept will be explained graphically	Students would be able understand 1. Introduction of functions 2. Domain and Range of a function 3. Types of functions (Polynomial function; Rational function; Composite function; Logarithm function; Exponential function; Modulus function; Greatest Integer function, Signum function) 4.Graphical representation of functions 5.Concept of limits and continuity of a function 6. Instantaneous rates of change 7.Differentiation as a process of finding derivative 8.Derivatives of algebraic functions using Chain rule 9.Tangent line and equations of tangents 10. Visualization of functions 11. Approach for solving daily life problems	**Question will be given and assessment will be on decided rubrics**
October 6 days + November 14 days **20**	**Probability**	Students will be able to understand following concepts: 1) Random experiments 2) Sample space 3) Mutually exclusive events 4) Conditional probabilities: Properties of conditional probabilities 5) Multiplication theorem on probability 6) Bayes' theorem	students will observe and incorporate the concept studied with the following situations as: 1)Concept of Probability is use to predict about the weather 2)Athletes and coaches use probability to determine the best sports strategies for games and competitions. 3)Probability plays an important role in analyzing insurance policies to	**PPT will be shown to students**	**Students would be able to understand concept of:** Students will be able to understand following concepts: 1) Random experiments 2) Sample space 3) Mutually exclusive events 4) Conditional probabilities:Properties of conditional probabilities 5) Multiplication theorem on probability 6) Bayes' theorem 7)Concept of Probability is use to predictabout the weather 8)Athletes and coaches use probability to determine the best sports strategies for games and competitions. 9)Probability plays an important role in	**Question will be given and assessment will be on decided rubrics**

			determine which plans are best for you or your family and what deductible amounts you need 4)Use of probability while playing board, card or video games that involve luck or chance 5)In Sales forecasting		analyzinginsurance policies to determine which plans are best for you or your family and what deductible amounts you need 10)Use of probability while playing board, card or video games that involve luck or chance 11)In Sales forecasting	
November 6 days + December 20 days **25**	**Descriptive Statistics**	To enable the students to understand and apply: 1)Types of data (raw data, univariate data, bivariate and multi-variate data) 2)Data on various scales (nominal, ordinal, interval and ratio scale) 3)Data representation and visualization 4)Data interpretation (central tendency, dispersion, deviation, variance, skewness and kurtosis) 5)Percentile rank and quartile rank 6)Correlation (Pearson and Spearman method of correlation) 7)Applications of descriptive statistics using real time data	After learning this chapter students will be able to develop 1) understanding about collection of information 2)Checking authenticity of information 3)Developing tool to verify result for any data	**They will be asked to calculate central tendencies from a set of data given to them.**	**Students would be able to understand concept of:** 1)Types of data (raw data, univariate data, bivariate and multi-variate data) 2)Data on various scales (nominal, ordinal, interval and ratio scale) 3)Data representation and visualization 4)Data interpretation (central tendency, dispersion, deviation, variance, skewness and kurtosis) 5)Percentile rank and quartile rank 6)Correlation (Pearson and Spearman method of correlation) 7)Applications of descriptive statistics using real time data 8) understanding about collection of information 9)Checking authenticity of information 10)Developing tool to verify result for any data	**Question will be given and assessment will be on decided rubrics**

Januar y 23 Days + Febru ary 5 days	**Basics of Financial Mathematics**	Students will be able to: 1) Understand the concept of interest and interest rate a) Accumulation with simple and compound interest b) Simple and compound interest rates with equivalency c) Effective rate of interest 2) Understand the concept of presentvalue, net present value and future value a) Annuities, calculating value of regular annuity b) Simple applications of regular annuities 3) Understand concept of tax, calculation of tax and simple applications of tax calculation in Goods andService tax, Income Tax 4) Calculate bills, tariff rates, fixed charge, surcharge, service charge 5) Calculate and interpret electricity bill, water supply bill and othersupply bills 6) Compare interest rates on various types of savings 7) Calculate income tax 8) Understand concept of various types of bills and surcharges (like Electricity bills, water bill etc)	Students will attain **They will be able to:** 1. Calculate amount they will receive on depositing specific principal amount, at specific rate of interest after particular interval of time against their savings/fixed deposit 2. Compare different saving/fixed deposit schemes of bank 3. Compare different insurance policies of different companies 4. Calculate their own electricity bill, water bill etc which helps in preventing them by being cheated 5. Calculate income tax	Video (based on real life situations) will be shown to the students to create their interest in topic	1) Understand the concept of interest and interest rate a) Accumulation with simple and compound interest b) Simple and compound interest rates with equivalency c) Effective rate of interest 2) Understand the concept of present value,net present value and future value a) Annuities, calculating value of regular annuity b) Simple applications of regular annuities 3) Understand concept of tax, calculation of tax and simple applications of tax calculation in Goods andService tax, Income Tax 4) Calculate bills, tariff rates, fixed charge, surcharge, service charge 5) Calculate and interpret electricity bill, water supply bill and othersupply bills 6) Compare interest rates on various types of savings 7) Calculate income tax 8) Understand concept of various types of bills and surcharges (like Electricity bills, water bill etc) 9. Calculate amount they will receive on depositing specific principal amount, at specific rate of interest after particular interval of time against their savings/fixed deposit 10. Compare different saving/fixed deposit schemes of bank 11. Compare different insurance policies of different companies 12.. Calculate their own electricity bill, water bill etc which helps in preventing them by being cheated 13. Find and pay correct amount of income tax, which helps is overall progress of country	**Questi on will be given and assess ment will be on decide d rubrics**