

**The Jammu and Kashmir State Board of School Education**  
**Academic Division New Campus Bemina Srinagar**

Revised Syllabi of Business Mathematics, Statistics and Applied Mathematics for class XI, for comments suggestions, if any from Stake Holders before notifying the same for the current session 2011 Kashmir Division.

**Business Mathematics Class XI.**

**Max Marks :- 150**

**Term Ist**

1. Sets , Relations and Functions	20
2. Sequence and Series	20
3. Trigonometry	20
4. Permutations and combinations	15
<b>Total :-</b>	<b>75</b>

**Term IInd**

5. Binomial Theorem	15
6. Statistics	25
7. Probability	20
8. Linear Inequations	15
<b>Total :-</b>	<b>75</b>

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**Unit 1. Sets , Relations and Functions**

Sets and their representation . various types of sets ,compliment of a set . Algebra of sets ( Union , intersection and difference of sets ) . Demorgan's laws , Cartesian product of sets . Relations: Various types of relations , Equivalence relation simple examples  
Definition of a function and its various types ( Into , onto,one-one , many- one, polynomial function, rational , modulus , constant , signum, greatest integer function, composite function)

**Unit 2 nd. Sequences and Series**

Geometric progression , general term sum to n terms , and sum to infinity of a geometric series . Geometric and arithmetic means , Evaluation of  $\sum n$  ,  $\sum n^2$  ,  $\sum n^3$

### **Unit 3<sup>rd</sup>. Trigonometry**

Trigonometric ratios of allied angles (without proof) . sum , difference formulae and their applications . solution of trigonometric equations .

### **Unit 4<sup>th</sup>. Permutations and combinations**

Factorial notation , fundamental principle of counting . Meaning of  $n(P,r)$  and  $n(C,r)$  and their relations with simple applications.

### **Unit 5<sup>th</sup>. Binomial theorem**

Binomial theorem for any index . General term , middle term/s of a Binomial Expansion . Applications of binomial expansion.

### **Unit 6<sup>th</sup>. Statistics**

Measures of dispersion, Mean Deviation from mean and median.  
Standard deviation and variance of a grouped and ungrouped data.  
Quartile deviation.

### **Unit 7<sup>th</sup>. Probability**

Random experiment and sample space ( set representation) . Events and their occurrence. various types of events .Mutually exclusive and Exhaustive events . Axiomatic probability with applications.

### **Unit 8<sup>th</sup>. Linear Inequations**

Algebraic solution of an inequation in one variable and the representation on a number line. Graphical solution of linear inequations in two variables.

# Applied Mathematics Class XI.

**Max Marks :- 150**

## Term Ist

1. Sets, Relations and Functions	20
2. Complex Numbers and Quadratic Equations	20
3. Sequence and Series	15
4. Trigonometry	20
<b>Total :-</b>	<b>75</b>

## Term IInd

5. Permutations and Combinations, Binomial theorem	25
6. Coordinate Geometry	20
7. Vectors	15
8. Probability	15
<b>Total :-</b>	<b>75</b>

### Unit 1. Sets , Relations and Functions

Sets and their representation . finite and infinite sets . empty sets . equality of sets . subset, powerset , universal set , venn diagram, compliment of a set . Algebra of sets ( Union , intersection and difference of sets ) . Demorgan's laws , Cartesian product of sets . Relations , types of relations ( equivalence relation).  
Definition of a function and its various types.

### Unit 2<sup>nd</sup>. Complex numbers and quadratic equations

Definition of a complex number , its representation. Conjugate of a complex number , modulus of a complex number , amplitude of a complex number. Square root of a complex number .Cube roots of unity and its properties. Quadratic Equations with complex coefficients and roots.

### Unit 3<sup>rd</sup>. Sequences and Series

Geometric progression , general term sum to n terms , and sum to infinity of a geometric series . Geometric and arithmetic means , Evaluation of  $\sum n$  ,  $\sum n^2$  ,  $\sum n^3$

### Unit 4<sup>th</sup>. Trigonometry

Trigonometric ratios of allied angles (without proof) . sum , difference formulae and their applications . Solution of trigonometric equations .

### **Unit 5th. Permutations -combinations & Binomial theorem**

Factorial notation , fundamental principle of counting . Meaning of  $n(P,r)$  and  $n(C,r)$  and their relations with simple applications.

Binomial theorem for any index . General term , middle term/s of a Binomial Expansion . Applications of binomial expansion.

### **Unit 6<sup>th</sup>. Co-ordinate Geometry**

**2- Dimensional Geometry** :Applications of section formula (centroid , incentre and orthocenter of a triangle). Equation of straight line in various forms . condition of perpendicularity and parallelism .

Equation of a circle in general and standard form and in diametric form.

**3-Dimensional Geometry** : Distance formula ,Section formula , direction cosines and direction ratios. Projection of a line with respect to another line. Angle between two lines.

### **Unit 7<sup>th</sup>. Vectors**

Definition of a vector and its representation . types of vectors . components of a vector . Addition of vectors ( commutative and associative laws of vectors . Dot and cross product of vectors . Triple scalar product with geometrical interpretation.

### **Unit 8<sup>th</sup>. Probability**

Random experiment and sample space . Event of a sample space and its various types. Axiomatic probability .

## **STATISTICS XI**

Maximum Marks: 150

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Maximum Marks: 150

Maximum Marks (Theory ): 120

Maximum Marks Practical (30)

**U1= 12,      U2= 08,      T1= 40,      U3=12      U4= 08      T2= 40**

### **Term – I**

#### **Unit I: Introduction to Statistics**

Origin, Definition and Meaning of Statistics. Importance and Scope of Statistics. Limitations of Statistics. Data and its types (Primary , Secondary, Qualitative and Quantitative data) Sources of secondary data. (10)

#### **Unit II: Data Collection.**

Concept of Population and Sample. Methods of data collection (Questionnaire and Interview Method). Merits and Demits of these Methods. Presentation, Classification and Tabulation of data. Discrete and continuous data. Frequency and frequency distribution. (10)

#### **Unit III: Graphical representation of data**

Representation of data by Graph, its advantages. Construction of diagrams/Charts (Bar chart, Multiple Bar diagram, Pie chart). Frequency graphs (Histogram, Frequency Polygon, Frequency Curve, Ogive Curves) (10)

#### **Unit IV: Measures of Location**

Centre Tendency and its Measures (Mean, Median, Mode, Geometric Mean and Harmonic Mean). Essentials of good average. Merits and Demerits of Measures of Central Tendency. Combined and Weighted Mean. (15)

#### **Unit V: Partitition Values**

Graphical Location of Median, Concept of Quartiles, Deciles and Percentiles. Percentile Rank. Empirical relation between Mean, Median and Mode. Symmetrical and Asymmetrical data. (15)

## Term – II

### **Unit VI: Dispersion**

Dispersion and its absolute measures (Range, Quartile Deviation, Mean Deviation and Standard Deviation). Merits and Demerits of these measures. Relative measures of Dispersion (Co-efficient of Range, Co-efficient of Quartile deviation, Co-efficient of Standard deviation). Co-efficient of variation (C.V.). (15)

### **Unit VII: Moments**

Define Moments, Types of Moments (Raw Moments and Centre Moments for discrete and continuous data). Relationship between Raw and Central Moments. Numerical illustration based on Moments. (10)

### **Unit VIII: Skewness and Kurtosis**

Define Skewness and its types, Measures of Skewness (Karl Pearson, Bowley's and Moment based measure), Kurtosis and its types. Measures of Kurtosis. (10)

### **Unit IX: Correlation**

Bivariate data, Scattered diagram, Concept of Correlation and its types. Methods of measuring Correlation ( Product moment method, Graphical method). Properties of Correlation co-efficient. Rank correlation for simple and repeated Ranks. (15)

### **Unit X: Introduction to Computers**

Basic idea about computers, Functional components (Input/Output Units, Hardware and Software). Generation of Computers, Concept of flow charts, Classification of computers. (10)

### **Practical Work :- ( weightage 30 marks )**

1. Practical's based on Baye's thermo.
2. Calculation of two Regression lines.
3. Construction of Index numbers (Laspyer's , Paasche's & Fisher's method.)
4. Practical's based on measures of fertility and mortality .
5. Estimates of Trend values by free hand and semi average method.
6. Drawing of Charts through Excel.
7. Measures of Central Tendency through Excel.