Government College (Autonomous)
Rajamahendravaram

NAAC Accredited at 'A+' Grade

DEPARTMENT OF STATISTICS

B.A. (I,II,III,IV,V&VI) SEMESTERS

SYLLABUS & MODEL PAPERS

2021-2022

GOVERNMENT COLLEGE (A) RAJAMAHENDRAVARAM

DEPARTMENT OF STATISTICS

Committee Constituted for Board of Studies Meeting for the year 2021-2022

Sl. No.	Name	Member
1	Dr. G.S. Moses Head, Dept of Statistics DNR College(Autonomous) Bhimavaram	University Nominee
2	Dr. D.V. Ramana Murthy Head, Dept of Statistics SKVT College Rajahmundry	Local Subject Expert
3	Sri M. Kodandaram LIC of India Rajahmundry	Industrial Nominee
4	Sri K. Ashok Lecturer in Statistics PR Govt College((A) Kakinada	Subject Expert
5.	Mr. Ch. Naresh Guest faculty in Statistics Govt college(A) Rajamahendravaram	Member
6.	Mr. J. Naga Sriram Guest faculty in Statistics Govt College(A) Rajamahendravaram	Member
7.	MsK.Suneetha Guest faculty in Statistics Govt College(A) Rajamahendravaram	Member
8.	Student Members (i) Sk. Hafeez (ii) A. Sirisha (iii) G. Aasha Devi (iv) A Swathi	

DEPARTMENT OF STATISTICS

Approved List of Examiners/ Paper Setters

Name of the Lecturer/Reader	College	Phone.NO	Mail.id
Sri A. Anand, Lecturer	M.R.College, Vizianagaram		
Dr.C.S.S.R.L.H.Rao, Lecturer	M.R.College, Vizianagaram	9394066306	chraomr@gmail.com
Dr, P. KondaBabu, Lecturer	M.R.College, Vizianagaram	9491571046	kondababupuli@gmail.com
Sri G. Moses, Lecturer	D.N R College, Bhimavaram	9440185103	
Sri N. Srinivasa Rao, Lecturer	AndhraLoyolaCollege, Vijayawada		nunnasr@gmail.com
Dr. V. RohiniKumari, Lecturer	Govt. College for Men, Ananthapur	9848236535	vrohinikumari@gmail.com
Dr.KousarJahaBegum,Lecturer	Govt. College, Chittoor	9985312244	begum.kousar123@gmail.com
Sri T. Gandhi, Lecturer	Mrs.A.V.N.College,Visakhapatnam		
Sri V. Praveen, Lecturer	A.B.N. College, Kovvur	8184853368	
Grandhi Prasad, Lecturer	AdityaDegreecollege,Rajahmundry		
Dr.D.V.RamanaMurthy ,Lecturer	SKVT College, Rajahmundry	9949135864	dr.dvvmurthy@gmail.com
Sri K. Ashok, Lecturer	P.R.College(A),Kakinada	9848505506	sairamya285@gmail.com
Dr.B.ChndraSekharReddy, Lecturer	S R DegreeCollege, Punganur	9492376446	csr.bhumireddy@gmail.com
Dr.B.Venkata Ram, Lecturer	SSBN Degree College,Ananthapur	9440410474	gsd.atp@gmail.com
Dr.V.Munnaih, Lecturer	PVKN.GOVT.College,Chitturu	924852594	drvmstats@gmail.com
Dr.N.Madhavi,Lecturer	GOVT.College(A),Rajahmundry	9951768491	madhavi.au@gmail.com
Dr.A.Kullaya swamy,Lecturer	S.G.College for Degree and PG	8019114632	swamy.anchal@gmial.com
Dr.R.V.S.Prasad,Lecturer	P.R.R.V.S GOVT college ,Vidava	9440493600	drrvsstatnlr@gmail.com
Dr.Devasena,Lecturer	S.S.B.N Degree college,Ananthpur	9441469927	gsd.atp@yahoo.com
Dr.D.V.L.N.Jogiraju,Lecturer	B.V.K.Degree College,Visakhaptanam	9440426883	Jogiraju76@gmail.com
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Sri.J.Naga Sriram,Lecturer	GOVT.College(A),Rajahmundry	7382499623	nagasriram.jonnala@gmail.com
K.Suneetha,lecturer	GOVT.College(A),Rajahmundry	7286038880	sunithakothuri7215@gmail.com
CH.Chinamambha,Lecturer	P.R.College(A),Kakinada	8328258107	
P.Annapurna,Lecturer	P.R.College(A),Kakinada	9885154367	
D.Madhulatha,Lecturer	S.K.V.T.College,Rajahmundry	7416179782	

Signatures

1.
2.
3.
4.

Chairman
Board of Studies

GOVERNMENT COLLEGE (A+) RAJAMAHENDRAVARAM
DEPARTMENT OF STATISTICS

Consolidated Report of Board of Studies for the Year 2021-2022

The Board of Studies meeting is held in the Department of Statistics conducted on 16-09-2021 from 11.00 to 12.00 for all the semesters under the Chairmanship of Dr.N.Madhavi Lecturer in – charge of Department of statistics with the following members.

The following members were present

Sl. No.	Name	Member	Signature
1	Dr. G.S. Moses Head, Dept of Statistics DNR College(Autonomous) Bhimavaram	University Nominee	
2	Dr. D.V. Ramana Murthy Head, Dept of Statistics SKVT College Rajahmundry	Local Subject Expert	
3	Sri M. Kodandaram LIC of India Rajahmundry	Industrial Nominee	
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5.	Mr. Ch. Naresh Guest faculty in Statistics Govt college(A) Rajamahendravaram	Member	
6.	Mr. J. Naga Sriram Guest faculty in Statistics Govt College(A) Rajamahendravaram	Member	
7.	MsK.Suneetha Guest faculty in Statistics Govt College(A) Rajamahendravaram	Member	
8.	Student Members (i) Sk. Hafeez (ii) A. Sirisha (iii) G. Aasha Devi (iv) A Swathi		

The following documents are submitted to the Academic Coordinator and Controller of Examinations

1. **Syllabus of I, III and V Semesters.**
2. **Model Question Papers of all the Semesters.**
3. **List of Revised Examiners.**
4. **Any other item with the permission of the chair.**

Signatures

1.
2.
3.
4.

Chairman
Board of Studies

BA SYLLABYS 2021-22

FIRST YEAR							
SEM	**PAPER**	**TITLE**	**CREDITS**				
Semester I	**Paper-I**	**Quantitative Statistics**	**4**	**3**	**50**	**50**	**100**
Semester I	**Paper-I**	**Practical's**	**2**	**2**	**0**	**50**	**50**
Semester II	**Paper-II**	**Descriptive Statistics**	**4**	**3**	**50**	**50**	**100**
Semester II	**Paper-II**	**Practical's**	**2**	**2**	**0**	**50**	**50**
SECOND YEAR							
Semester III	**Paper-III**	**Probability Distributions and statistical Methods**	**4**	**3**	**50**	**50**	**100**
Semester III	**Paper-III**	**Practical's**	**2**	**2**	**0**	**50**	**50**
Semester IV	**Paper-IV**	**Statistical Inference**	**4**	**3**	**50**	**50**	**100**
Semester IV	**Paper-IV**	**Practical's**	**2**	**2**	**0**	**50**	**50**
Semester IV	**Paper-V**	**Applied Statistics**	**4**	**3**	**50**	**50**	**100**
	Paper-V	**Practical's**	**2**	**2**	**0**	**50**	**50**
THIRD YEAR							
Semester V	**Paper-V**	**Basics of Statistical Inference**	**3**	**3**	**50**	**50**	**100**
	Paper-V	**Practical's**	**2**	**2**	**0**	**50**	**50**
	Paper-VI	**Theory of Sampling**	**3**	**3**	**50**	**50**	**100**
	Paper-VI	**Practical's**	**2**	**2**	**0**	**50**	**50**
Semester VI	**Paper-VII**	**ELECTIVE-1: Applied Statistics**	**3**	**3**	**50**	**50**	**100**
		ELECTIVE-2: Actuarial Statistics	**3**	**3**	**50**	**50**	**100**
		ELECTIVE-3: Stochastic Processes and its applications	**3**	**3**	**50**	**50**	**100**
	Paper-VII	**Practical's**	**2**	**2**	**0**	**50**	**50**

	Cluster (A)	A1- Basics of Operation Research	3	3	50	50	100
		Practical	2	2	0	50	50
		A2-Statistical Computer Applications	3	3	50	50	100
		Practical	2	2	0	50	50
		Project & Viva voce	5	5	50	50	100
Semester VI	Cluster (B)	B1-Official Statistics and Design of Experiments	3	3	50	50	100
		Practical	2	2	0	50	50
		B2-Mortality and Actuarial Statistics	3	3	50	50	100
		Practical	2	2	0	50	50
		Project & Viva voce	5	5	40	60	100
	Cluster (C)	C1-Testing of Hypothesis	3	3	50	50	100
		Practical	2	2	0	50	50
		C2-Decision Making Analysis	3	3	50	50	100
		Practical	2	2	0	50	50
		Project & Viva voce	5	5	40	60	100

GOVERNMENT COLLEGE (A) RAJAMAHENDRAVARAM

DEPARTMENT OF STATISTICS

B.A (E.S.C, E.S.CS)

PROGRAM CODE: E.S.Comm:1103 & E.S.Comp:1207

S.NO	SEMESTER	TITLE OF THE PAPER	COURSE CODE
1	I	Quantitative Statistics	STT301
2	II	Descriptive Statistics	STT302
3	III	Probability and Probability Distributions	STT151
4	IV	Statistical Methods	STT181
5	IV	PAPER V-Basics of Statistical Inference	STT166
6	V	PAPER-VI-Theory of Sampling	STT167
7	VI	Elective I: Applied Statistics	STT153
8	VI	Elective II: Demography	STT147
9	VI	Elective III: Stochastic Process and its applications	STT161
10	VI	A1-Operation research	STT149
11	VI	A2-Statistical Computer Applications	STT166
12	VI	A3-Project & Viva Voce	STT155
13	VI	B1-Official statistics and Design and Experiments	STT156
14	VI	B2-Mortality and Actuarial Statistics	STT157
15	VI	B3-Project & Viva Voce	STT158
16	VI	C1-Testing of Hypothesis	STT162
17	VI	C2-Decision Making Analysis	STT159
18	VI	C3-project & Viva Voce	STT163

Department of Statistics

B.A. (E.S.C & E.S.CS)

PROGRAM EDUCTAIONAL OBJECTIVES:

- **To prepare students for lifelong learning and successful careers using their statistical skills**
- **To make the students to know about survey**
- **To teach basic concepts of mathematics based on statistics**
- **To create awareness on Opportunities in statistics**
- **To train students thoroughly in methods of analysis**

PROGRAM OUTCOMES:

After completion of the course, the student would be able to

- ✓ **Use Statistical knowledge to analyze solve the problems**
- ✓ **Analyze the data effectively in different areas**
- ✓ **Use tools and applications of Statistics in various s disciplines**
- ✓ **Know application of statistics based on day to day life**
- ✓ **Develop good skills in solving the problems**

	Government College (Autonomous) Rajahmundry	Program & Semester I BA. (I Sem)			
Course Code STT 301	**TITLE OF THE COURSE** **Quantitative Statistics**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic knowledge in mathematics	0	4	3	3

Course Objectives:

1. **Quantitative Statistics main aim is to develop ability to perform the FOUR basic operators and also develop skills in measurement, approximation and estimation .**
2. **This paper will help the student can understand statistics easily based on performing some basic concepts of mathematics which are related to statistics**

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	**After completion of the course, the student would be able toUse Statistical knowledge to analyze solve the problems**
CO2	**Analyze the data effectively in different areas**
CO3	**Use tools and applications of Statistics in various s disciplines**
CO4	**Know application of statistics based on day to day life**
CO5	**Develop good skills in solving the problems**

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit-1

Set Theory: Basics of Set theory, types of sets, equal and equivalent sets, finite and infinite sets, Venn Diagrams, Operation on sets intersection of sets and differences of two sets

Unit-II

Sequences and Series: Sequence ,Series and functions, types of functions; Solution of simultaneous linear equations, Quadratic equations.

Unit-III

Progressions- AP, GP, HP; Permutations, Combinations, Binomial theorem and their Related problems.

Unit-IV

Elementary Matrices: Definition and types of matrices, Addition, Subtraction, Scalar Multiplication of matrices.

Unit-V

Determinant of matrix, Transpose of a Matrix, Inverse and Rank of 3 X 3 matrices only. Solution of simultaneous linear equations by matrix methods- Cramer's Rule and Matrix Inversion methods.

Textbooks:

1. Differential Calculus- SanthiNarayana.
2. Outlines of Matrices-Schaum.

Referencebooks:

1. S.P.Gupta: Statistical Methods. Sultan Chand
2. S.C.Gupta and V.K.Kapur: Fundamentals of Mathematical Statistics. Sultan Chand.
3. MoulikaGanithamuSambavyata – Telugu Academy.
4. Quantitative Techniques I- Sultan Chand Publication.

WebLinks:

1. **https://youtu.be/7H3JFH3IjB0**
2. **https://youtu.be/BGE5Y6TXPUQ**
3. **https://youtu.be/jkfwVH0foMw**

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	2	2	2	3	2	2	3	2	3	2	2	2	2
CO2	2	1	3	2	2	2	2	3	2	1	2	2	2
CO3	1	3	2	3	3	3	3	2	2	3	2	2	1
CO4	2	2	3	2	2	2	2	2	3	2	2	1	2
CO5	2	2	1	2	1	2	2	1	1	1	1	1	2

	Government College (Autonomous) Rajahmundry	Program & Semester I BA (I Sem)			
Course Code STT301	**TITLE OF THE COURSE** **Quantitative Statistics**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Basic knowledge in Mathematics	0	0	3	2

Objectives:

1. Quantitative Statistics main aim is to **develop ability to perform the FOUR basic operators and also develop skills in measurement, approximation and estimation .**

2. **This paper will help the student can understand statistics easily based on performing some basic concepts of mathematics which are related to statistics**

List of Experiments/Syllabus:

Practical's- Semester-I

Conduct any 6 Practical's.

1. Solution to Simultaneous Linear equations
2. Progressions- AP, GP, HP
3. Addition, Subtraction, Multiplication of Matrices.
4. Determinant of a Matrix
5. Solution of equations by Matrix methods.
6. Simple differentiation
7. Integrations

Referencebooks:

1. S.P.Gupta: Statistical Methods. Sultan Chand
2. S.C.Gupta and V.K.Kapur: Fundamentals of Mathematical Statistics. Sultan Chand.
3. MoulikaGanithamuSambavyata – Telugu Academy.
4. Quantitative Techniques I- Sultan Chand Publication.

Virtual LabLinks:

1. **https://youtu.be/7H3JFH3IjB0**
2. **https://youtu.be/BGE5Y6TXPUQ**
3. **https://youtu.be/jkfwVH0foMw**

GOVERNMENT COLLEGE (A) RAJAMAHENDRAVARAM
FIRST SEMESTER END EXAMINATION 2021-22
I BA – STATISTICS (SEMESTER-I)
PAPER I- QUANTITATIVE STATISTICS

Time: 2 ½ hrs. **Max Marks-50**

MODEL PAPER

SECTION-A

Answer any SIX questions **6x3=18M**

1. Obtain the roots of the quadratic equation $ax^2 + bx + c = 0$
2. Explain permutation and combination with examples.
3. Write short notes on Arithmetic progression
4. Define finite set, infinite set with their examples
5. $n_{c3} = n_{c5}$ find n
6. Define matrix and its properties
7. Explain Different types of functions
8. Explain Venn Diagram
9. Define Series and Sequence with Suitable Examples
10. Explain Binomial Theorem

SECTION-B

Answer any FOUR Questions **4x8=32M**

11 If A= $\{1,2,3,4,5,6,7,8,9\}$ B=$\{3,5,7\}$ and C= $\{2,4,6\}$
Prove the following equation $AU(BUC) = (AUB)UC$

12 Find the sum and product of the roots of the equation $x^2+4x+3 = 0$

13 Find sum of 'n' terms of the series 7+77+777+…….

14 Explain types of Matrices

15 Solve the following equations by Cramer method

$$2x - y = 5, \quad 3x + 2y = -3$$

16 If $A = \begin{matrix} 1 & -1 & 3 \\ 4 & 2 & -1 \\ 1 & 3 & 1 \end{matrix}$ then find A^{-1}

17 Define Set and Explain Different types of Sets

	Government College (Autonomous) Rajahmundry	Program & Semester I BA. (II Sem)			
Course Code STT302	**TITLE OF THE COURSE** **Descriptive Statistics**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic knowledge in Mathematics				

Course Objectives:

1. Descriptive statistics are used to describe the basic features of the data in a study.
2. They provide simple summaries about the sample and the measures.
3. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data.

Outcomes:

On Completion of the course, the students will be able to-	
CO1	**Students would be able to learn about Statistics, function of statistics and their applications in daily life**
CO2	**Students would be able to learn about Data collection procedures, classification of data**
CO3	**Students would be able to learn about various methods of Central tendency**
CO4	**Students would be able to learn about different methods of dispersion**
CO5	**Students would be able to learn about different methods of dispersion**

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit-I:

Introduction to Statistics: Statistics, Definition, application, scope, limitation, primary and secondary data, methods of collecting Primary and Secondary data. Statistical enquiry, Questionnaire and Schedule, Raw data, Editing of data.

Unit-II:

Classification and Tabulation: Classification of data, Frequency distribution, rules of tabulation, simple and complex tables, single, double and manifold tables.

Unit-III:

Diagrammatic Representation: Bar diagrams, square, rectangle, Pie-charts, Histogram, Frequency polygon, Ogives.

Unit-IV:

Measures of Central Tendency: Mean, Median, Mode, G.M & H.M, merits and demerits, finding median by graphic method, quartiles, deciles & percentiles.

Unit-V:

Measures of Dispersion: Range, Q.D, S.D, M.D, Coefficient of variation, Lorenz curve. Moments, Skewness and Kurtosis

Textbooks:

1. **Fundamentals of Mathematical Statistics- SC Gupta and V.K.Kapoor**
2. **3.Moulika Ganithamu Sambavyata - Telugu Academy.**
3. **Quantitative Techniques I-Sultan Chand Publication**

Reference books:

1. S.P.Gupta: Statistical Methods. Sultan Chand
2. S.C.Gupta and V.K.Kapur: Fundamentals of Mathematical Statistics. Sultan Chand.
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3. **https://youtu.be/jkfwVH0foMw**

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	1	2	2	1	2	1	3	2	3	2	2	2	2
CO2	2	3	3	2	1	3	2	3	1	1	2	2	2
CO3	3	1	2	3	3	2	2	2	2	3	3	2	1
CO4	2	2	3	2	2	2	1	2	3	2	2	2	2
CO5	1	2	2	1	2	2	2	1	2	1	2	1	2

	Government College (Autonomous) Rajahmundry	Program & Semester I BA (II Sem)			
Course Code STT302	**TITLE OF THE COURSE** **Descriptive Statistics**				
Teaching	Hours Allocated: (**Lab**)	L	T	P	C
Pre-requisites:	Basic Knowledge in Mathematics	0	0	3	2

Objectives:

1. **Descriptive statistics are used to describe the basic features of the data in a study.**
2. **They provide simple summaries about the sample and the measures.**
3. **Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data.**
4. **Descriptive statistics are typically distinguished from inferential statistics.**

List of Experiments/Syllabus:

Practical's- Semester-II

Conduct any 6 Practical's.(MS-excel is compulsory)

1. **Raw data analysis methods, Questionnaire**
2. **Bar diagrams**
3. **Pie diagrams**
4. **Histogram**
5. **Frequency Polygon.**
6. **Measures of Central Tendency**
7. **Measures of Dispersion**
8. **Frequency Distribution**
9. **Skewness and Kurtosis**
10. **Moments**

Reference books:

5. S.P.Gupta: Statistical Methods. Sultan Chand
6. S.C.Gupta and V.K.Kapur: Fundamentals of Mathematical Statistics. Sultan Chand.
7. MoulikaGanithamuSambavyata - Telugu Academy.
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Virtual Lab Links:

1. **https://youtu.be/7H3JFH3IjB0**
2. **https://youtu.be/BGE5Y6TXPUQ**
3. **https://youtu.be/jkfwVH0foMw**

Government College [A+] Rajamhendravaram

CBCS SYLLABUS (Semester Wise) 2021-22

I B.A. Statistics/Semester-II

(Non-Mathematics Combination)

Descriptive Statistics Paper - II

Time: 2 1/2 hrs **Model paper** **Max Marls: 50**

SECTION_A

Answer any SIX of the following Questions. **6X3=18M**

1. **Explain the Functions of Statistics?**
2. **Write about Classification of data?**
3. **Explain about Mean Deviation**
4. **Distinguish between a Questionnaire and a Schedule**
5. **Describe Pie charts**
6. **Write about Quartiles, Deciles, Percentiles,**
7. **Explain the concept of Kurtosis**
8. **Find Mean, Median, Mode to the following data 6,6,7,8,8,8,2,5,6,9,5 and 17**
9. **Find Standard deviation to the following data 10, 7,8,12 and 14**
10. **Find Quartile deviation to the following data 3,3,4,6,7,4,5 and 6**

SECTION-B

Answer any FOUR of the following questions. **4X8=32M**

10. **Define various definitions of Statistics and Limitations of Statistics**

11. **Explain the concept of Tabulation**

12. **Define Classifications of data explain various types of classifications**

13 **Explain the Various methods of collecting data**

14. **What is skewness and explain types of skewness?**

15. **Explain the importance of Diagrams. Construct Histogram and Frequency Polygon for the Following Data**

Class interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	14	16	30	22	18	10	9

16. **Explain the any two measures of Central Tendency with its Merits and Demerits**

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code STT303	**TITLE OF THE COURSE** **Probability Distributions and Statistical Methods**	II BA.(III Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic knowledge in Statistical functions	0	4	3	3

Course Objectives:

1. The aim of the paper is to Distinguish between discrete and continuous random variables, find probabilities associated with a discrete probability distribution.

2. Compute the mean and variance of a discrete probability distribution.

3. Find probabilities associated with other distributions and also know various applications of distributions and also to learn about statistical methods.

Outcomes:

On Completion of the course, the students will be able to-	
CO1	**learn about Probability**
CO2	**learn about mathematical expectations**
CO3	Learn about Probability distributions
CO4	**Learn about Statistical methods**
Co5	**Learn about curve fitting**

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit-I

Probability introduction: Definitions of random experiment, outcome, sample space, event, mutually exclusive event, equally likely events, favorable events, classical, statistical and axiomatic definitions of probability. Addition and multiplication theorems for two events, Conditional probability. Bayes'theorem statement and problem based on it.

Unit-II

Random Variable: Discrete-Probability mass function, Continuous random variable-Probability density function, distribution function of a random variable and properties.

Mathematical Expectation: M.G.F, C.G.F, P.G.F and C.F and their properties

Unit-III

Probability Distributions: Binomial, Poisson, Geometric distributions-definitions, means, variances and applications of these distributions. Additive property if exists, Simple problems
Continuous Distributions**:** Rectangular, Normal, Exponential distributions-definitions and their properties, Simple problems.

Unit-IV

Correlation: Definition, Scatter diagram its coefficient and its properties. Scatter diagram, computation of correlation coefficient for ungrouped data. Spearman's rank correlation coefficient, properties of spearman's correlation coefficients and problems.

Unit-V

Regression: simple linear regression, properties of regression coefficients. Regression lines, Concept of Correlation ratio, partial and multiple correlation coefficients, correlation verses regression and their problems.

Curve fitting: Method of least square-Fitting of linear, quadratic, Exponential and power curves and their problems.

Textbooks:

1. Sambavyata - Telugu Academy
2. V.K.Kapoor and S.C.Gupta: Fundamentals of Mathematical Statistics.

Referencebooks:

1. Goon, Gupta and Das Gupta: Fundamentals of Statistics. Volume I .World Press
2. K.V.S. Sarma: statistics Made Simple: do it yourself on PC. PHI

Web Links

1. https://youtu.be/7H3JFH3IjB0
2. https://youtu.be/BGE5Y6TXPUQ
3. https://youtu.be/jkfwVH0foMw

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	2	2	2	2	2	2	3	2	3	2	2	2	2
CO2	2	3	3	2	2	2	2	3	2	3	2	2	2
CO3	3	3	2	3	3	1	2	2	2	3	1	2	1
CO4	2	2	3	2	2	2	3	2	1	2	2	2	2
CO5	3	2	2	2	2	2	2	2	3	1	1	2	2

	Government College (Autonomous) Rajahmundry	Program & Semester II BA (III Sem)			
Course Code STT303	**TITLE OF THE COURSE** **Probability Distributions and Statistical Methods**				
Teaching	Hours Allocated: (**Lab**)	L	T	P	C
Pre-requisites:	Basic knowledge in statistical concept	0	0	3	2

Objectives:

1. The aim of the paper is to Distinguish between discrete and continuous random variables, find probabilities associated with a discrete probability distribution.

2. Compute the mean and variance of a discrete probability distribution.

3. Find probabilities associated with other distributions and also know various applications of distributions and also to learn about statistical methods.

List of Experiments/Syllabus:

Practical's-Semester-III

1. Calculating Probabilities for simple Problems
2. Mathematical expectations & Random variables
3. Discrete probability distributions
4. Continuous probability distributions
5. Correlation
6. Regression computation
7. Fitting of curves

Reference books:

1. Goon, Gupta and Das Gupta: Fundamentals of Statistics. Volume I .World Press
2. K.V.S. Sarma: statistics Made Simple: do it yourself on PC. PHI

Virtual Lab Links:

1. **https://youtu.be/7H3JFH3IjB0**
2. **https://youtu.be/BGE5Y6TXPUQ**
3. **https://youtu.be/jkfwVH0foMw**

GOVERNMENT COLLEGE (A), RAJAMAHENDRAVARAM
II B.A. SEMESTER: III 2021-22
PAPERE III-Probability Distributions and Statistical Methods
(Without mathematical derivations)

Time: 2 ½ hrs **MODEL PAPER** **Max Marks: 50**

Section-A

Answer any SIX questions. **6 x 3 = 18M**

1. **Write short note on Probability**
2. **Define Poisson Distribution and its properties**
3. **Correlation vs Regression**
4. **Give the applications of Normal distribution**
5. **What are types of correlation**
6. **What are method of least Squares**
7. **What are types of Random variables**
8. **What is bayes theorem**
9. **Explain tied ranks**
10. **Normal distribution**

SECTION-B

Answer any FOUR questions **4 x8=32M**

11. **Explain types of Probabilities**
12. **Define Normal distribution. Mention its properties**
13. **Write about Binomial distribution and its properties**
14. **Define Correlation. Explain different types of correlation and its properties**
15. **Derive the equation of regression lines of X on Y and Y on X.**
16. **Explain the method of fitting a power curve $y = ab^x$ for a given data.**
17. **Explain Additional and multiplication theorem by using Expectation**

	Government College (Autonomous) Rajahmundry	Program & Semester II BA.(IV Sem) Paper-IV			
Course Code STT304	**TITLE OF THE COURSE** **Statistical Inference**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic knowledge in Statistical methods	0	4	3	3

Course Objectives:

1. The course aims at providing an introduction to statistical inference and its application to predictive statistical models.

2. The first part of the course will focus on basic probability.

3. Subsequently, the course will deal with the theory of statistical inference

Outcomes:

On Completion of the course, the students will be able to-	
CO1	**Learn about estimation**
CO2	**Learn about statistical hypothesis**
CO3	Learn about large sample tests
CO4	**Learn about small sample tests**
C05	**Learn about non-parametric tests**

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit-I

Theory of Estimation: Definitions of population, sample, parameter, statistic, sampling distribution of a statistic, standard error. Estimation-Criteria of a good estimator, meaning of interval estimation

Unit-II

Statistical Hypothesis- Null and alternative hypothesis, level of significance, Type I and Type II errors, Tailed tests in Hypothesis, Power of the test.Neyman-Pearson-Lemma

Unit-III

Large Sample test

Large sample tests for proportion (single & double), means (single & double), and standard deviations. Simple Problems

Unit-IV

Small Sample tests: Tests of significance based on chi-square, t and F, chi-square test for independence of attributes, t-test for single, double and paired tests, Variance Ratio test (F-test) , ANOVA Test ,Simple Problems

Unit-V

Non-Parametric tests: Advantages, Disadvantages, Sign test, Median test and Run test for two sample cases only.

Textbooks:

1 Statistical methods-S.P.Gupta

2 Fundamentals of statistics-Goon Gupta and Das Gupta Vol I and Vol II

Reference books:

1. AnuvarthithaSankyakaSastramu – Telugu Academy book.
2. Applied Statistics-V.K.Kapoor&S.C.Gupta
3. Applied Statistics-ParimalMukhopadhyay

Web Links

1. **https://youtu.be/7H3JFH3IjB0**
2. **https://youtu.be/BGE5Y6TXPUQ**
3. **https://youtu.be/jkfwVH0foMw**

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	3	2	2	2	2	3	3	2	3	2	3	2	2
CO2	3	2	3	2	2	2	2	3	2	2	2	2	2
CO3	2	2	2	3	3	3	3	2	2	3	3	2	3
CO4	2	2	3	2	2	2	2	2	1	2	2	2	2
CO5	3	2	2	2	2	2	2	2	2	3	3	1	2

	Government College (Autonomous) Rajahmundry	Program & Semester II BA (IV Sem) Paper-IV			
Course Code STT304	**TITLE OF THE COURSE** **Statistical Inference**				
Teaching	Hours Allocated: (**Lab**)	L	T	P	C
Pre-requisites:	Basic knowledge in Statistical methods	0	0	3	2

Objectives:

1. The course aims at providing an introduction to statistical inference and its application to predictive statistical models.

2. The first part of the course will focus on basic probability.

3. Subsequently, the course will deal with the theory of statistical inference

List of Experiments/Syllabus:

Practical's-Semester-IV

Conduct any 6 Practical's

1. Large sample tests-Mean(s)
2. Large sample tests-Proportion(s)
3. Small sample tests-t for Mean(s)
4. F-test for variance ratio
5. Chi square test for independence of attributes
6. N.P.tests-Run test, Median test, Sign test.
7. N.P Tests

Reference books:

1. AnuvarthithaSankyakaSastramu – Telugu Academy book.
2. Applied Statistics-V.K.Kapoor&S.C.Gupta
3. Applied Statistics-ParimalMukhopadhyay

Virtual Lab Links:

1. **https://youtu.be/7H3JFH3IjB0**
2. **https://youtu.be/BGE5Y6TXPUQ**
3. **https://youtu.be/jkfwVH0foMw**

GOVERNMENT COLLEGE (A), RAJAMAHENDRAVARAM
III B.A. SEMESTER: IV 2021-22

PAPER IV- Statistical Inference

(Without mathematical derivations)

Time: 2 ½ Hrs **MODEL PAPER** **Max Marks: 50**

SECTION-A

Answer any SIX questions **6 x 3 = 18M**

1. Explain Interval Estimation
2. Explain Null Hypothesis and Alternative Hypothesis
3. Explain Type I and Type II errors
4. Distinguish between large sample tests and small sample tests
5. Write short note on F-test
6. Write about Sign test for single sample
7. Write Short note on Chi-Square Goodness of fit
8. Discuss the advantages and disadvantages of Non parametric methods
9. What is Estimate and estimator
10. What are the applications of t-test

SECTION-B

Answer any FOUR questions **4 X8=32M**

11. Explain the criteria of a good estimator
12. State and Prove NP-Lemma
13. What is Testing of Hypothesis? Write procedure for testing of Hypothesis?
14. Explain the large sample test for equality of two means
15. Explain chi-square test for independence of attributes.
16. Explain the difference between parametric tests, Non-parametric tests?
17. Explain Median Test

	Government College (Autonomous) Rajahmundry	Program & Semester II BA.(IV Sem) Paper-V			
Course Code STT305	**TITLE OF THE COURSE** **Applied Statistics**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic knowledge in Statistical inference	0	4	3	3

Course Objectives:

After completion of this students would be able to learn different applications statistics.

Outcomes:

On Completion of the course, the students will be able to-	
CO1	**Learn about basics of sampling**
CO2	**Learn about Systematic and stratified sampling**
CO3	Learn about Time series
CO4	**Learn about index numbers**
CO5	**Learn about Vital statistics**

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit-I

Basics of Sampling: Population, sample, sampling versus census, sample survey meaning, Sampling and Non-sampling errors, Limitations of sampling
Principle steps in a sample survey. Types of samplings

Unit-II

Types of Sampling :Simple Random Sampling method: SRSWR, SRSWOR, Random number table method and lottery system method. Sample mean is an unbiased estimate of population mean, sample mean of variance.

Stratified Random Sampling: Meaning of Stratified random sampling, merits and demerits. Definitions of Proportional and Optimum allocations**.**

Systematic Random Sampling: Definition of systematic random sampling. Comparison of SRSWOR (problem), stratified and systematic samplings.

Unit-III

Time series: Meaning components, trend- graphical, semi-averages, straight line, parabola, moving average methods. Seasonal indices methods- simple averages –ration to trend, ratio to moving average, link relatives methods and simple problems.

Unit-IV

Index Numbers: Meaning and Definition of index Numbers Problems involved in Index Numbers ,types of Index Numbers, Criteria of Good index numbers, Cost of living and wholesale Index numbers and simple problems

Unit –V

Vital Statistics: Meaning, definition, uses, source of vital statistics – registration method, Census method Death rates-, Crude Death Rates – Age Specific Death Rate, Standardized Death rates Birth rates Crude Birth Rate, Age Specific Fertility Rate, General Fertility Rate, Total Fertility Rate

Textbooks:

1 Statistical methods-S.P.Gupta

2 Fundamentals of statistics-Goon Gupta and Das Gupta Vol I and Vol II

Reference books:

1. **Statistical methods-S.P.Gupta**
2. **Fundamentals of statistics-Goon Gupta and Das Gupta Vol I and Vol II**
3. **Anuvarthitha Sankyaka Sastramu – Telugu Academy book.**
4. **Applied Statistics-V.K.Kapoor & S.C.Gupta**
5. **Applied Statistics-Parimal Mukhopadhyay.**

Web Links

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2. https://youtu.be/BGE5Y6TXPUQ
3. https://youtu.be/jkfwVH0foMw

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	2	2	2	3	2	2	3	2	3	2	2	2	2
CO2	2	3	3	2	2	2	2	3	2	3	2	2	2
CO3	2	2	2	2	3	2	2	2	2	3	1	2	2
CO4	2	2	3	2	2	2	2	2	3	2	2	1	2
CO5	3	2	2	3	2	2	2	2	2	3	2	2	2

	Government College (Autonomous) Rajahmundry	Program & Semester II BA (IV Sem) Paper-V			
Course Code STT305	**TITLE OF THE COURSE** **Applied Statistics**				
Teaching	Hours Allocated: (**Lab**)	L	T	P	C
Pre-requisites:	Basic knowledge in Statistical inference	0	0	3	2

Objectives

List of Experiments/Syllabus:
Practical's-Semester-IV
Conduct any 6 Practical's

1. **Birth rates**
2. **Death rates**
3. **Trend-Straight line**
4. **Seasonal indices-Simple Average**
5. **Sampling SRSWR-SRSWOR**
6. **Stratified Sampling**
7. **Systematic Sampling**

Reference books:

1. **Statistical methods-S.P.Gupta**
2. **Fundamentals of statistics-Goon Gupta and Das Gupta Vol I and Vol II**
3. **Anuvarthitha Sankyaka Sastramu – Telugu Academy book.**
4. **Applied Statistics-V.K.Kapoor & S.C.Gupta**
5. **Applied Statistics-Parimal Mukhopadhyay.**

Virtual Lab Links:

1. **https://youtu.be/7H3JFH3IjB0**
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3. **https://youtu.be/jkfwVH0foMw**

Government College [A+] Rajamhendravaram

CBCS SYLLABUS (Semester Wise) 2021-22
II B.A Statistics/Semester-IV
(With Mathematics Combination)
Applied Statistics
Paper –V
MODEL QUESTION PAPER (THEORY)

Time: 2 1/2hrs **Max Marks: 50**

SECTION-A

Answer any SIX questions. **6 x 3= 18M**

1 Explain Total Fertility Rate and Age Specific Fertility Rate

2 Explain Abridged life tables

3 Explain the determination of trend by Semi averages method

4 Explain mathematical models in Time series

5 Explain CENSUS vs SAMPLING

6 Explain Cost of living Index Numbers

7 Explain Life Table

8 Types of Allocations in Sampling

9 Define systematic sampling

10 Simple Random Sampling Method

SECTION-B

Answer any FOUR questions **4x8=32M**

1. Explain Principle steps of sample Survey
2. Explain SRSWR with SRSWOR
3. Explain Stratified Sampling
4. Explain the various components of time series.
5. Explain the Problems involved of construction of Index numbers
6. Explain Types of Mortality rates
7. Explain the construction of life table

	Government College (Autonomous) Rajahmundry	Program & Semester III BA.(V Sem) Paper-V			
Course Code STT166	**TITLE OF THE COURSE Basics of Statistical Inference**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic knowledge in Statistical inference	0	4	3	3

Course Objectives:

Objective: The course aims at providing an introduction to statistical inference and its application to predictive statistical models. The first part of the course will focus on basic probability. Subsequently, the course will deal with the theory of statistical inference (point estimation, interval estimation, hypothesis testing).

Outcomes:

On Completion of the course, the students will be able to-	
CO1	**Learn about basics of sampling**
CO2	**Learn about Estimation concept**
CO3	Learn about Hypothesis
CO4	**Learn about Sample tests both large and small**
CO5	**Learn about Non parametric tests**

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit-I

Theory of Estimation: Definitions of population, sample, parameter, statistic, sampling distribution of a statistic, standard error. Estimation-Criteria of a good estimator, meaning of interval estimation

Unit-II

Statistical Hypothesis- Null and alternative hypothesis, level of significance, Type I and Type II errors, Tailed tests in Hypothesis, Power of the test.Neyman-Pearson-Lemma,

Unit-III

Large Sample test

Large sample tests for proportion (single & double), means (single & double), and standard deviations. Simple Problems

Unit-IV

Small Sample tests: Tests of significance based on chi-square, t and F, chi-square test for independence of attributes, t-test for single, double and paired tests, Variance Ratio test (F-test) , ANOVA Test ,Simple Problems

Unit-V

Non-Parametric tests: Advantages, Disadvantages, Sign test, Median test and Run test for two sample cases only.

Textbooks:

1 Statistical methods-S.P.Gupta

2 Fundamentals of statistics-Goon Gupta and Das Gupta Vol I and Vol II

Reference books:

1. **Statistical methods-S.P.Gupta**
2. **Fundamentals of statistics-Goon Gupta and Das Gupta Vol I and Vol II**
3. **Anuvarthitha Sankyaka Sastramu – Telugu Academy book.**
4. **Applied Statistics-V.K.Kapoor & S.C.Gupta**
5. **Applied Statistics-Parimal Mukhopadhyay.**

Web Links

1. https://youtu.be/7H3JFH3IjB0
2. https://youtu.be/BGE5Y6TXPUQ
3. https://youtu.be/jkfwVH0foMw

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	2	2	2	2	2	2	3	2	3	2	2	2	2
CO2	2	1	1	2	2	2	2	3	2	3	2	1	1
CO3	2	2	2	1	2	2	2	2	2	1	1	2	2
CO4	1	2	1	2	2	2	2	2	3	2	2	1	2
CO5	1	2	2	1	2	2	2	2	2	1	2	2	1

	Government College (Autonomous) Rajahmundry	Program & Semester III BA (V Sem) Paper-V			
Course Code STT166	**TITLE OF THE COURSE** **Basics of Statistical Inference**				
Teaching	Hours Allocated: (**Lab**)	L	T	P	C
Pre-requisites:	Basic knowledge in Statistical inference	0	0	3	2

Objectives

The course aims at providing an introduction to statistical inference and its application to predictive statistical models. The first part of the course will focus on basic probability. Subsequently, the course will deal with the theory of statistical inference (point estimation, interval estimation, hypothesis testing).

Practical's-Semester-V
Conduct any 6 Practical's

1. Large sample tests-Mean(s)
2. Large sample tests-Proportion(s)
3. Small sample tests-t for Mean(s)
4. F-test for variance ratio
5. Chi square test for independence of attributes
6. N.P.tests-Run test, Median test, Sign test.
7. N.P Tests

Reference books:

1. **Statistical methods-S.P.Gupta**
2. **Fundamentals of statistics-Goon Gupta and Das Gupta Vol I and Vol II**
3. **Anuvarthitha Sankyaka Sastramu – Telugu Academy book.**
4. **Applied Statistics-V.K.Kapoor & S.C.Gupta**
5. **Applied Statistics-Parimal Mukhopadhyay.**

Virtual Lab Links:

1. **https://youtu.be/7H3JFH3IjB0**
2. **https://youtu.be/BGE5Y6TXPUQ**
3. **https://youtu.be/jkfwVH0foMw**

GOVERNMENT COLLEGE (A), RAJAMAHENDRAVARAM
III B.A. SEMESTER: V 2021-22

PAPER V- Basics of Statistical Inference

(Without mathematical derivations)

Time: 2 ½ Hrs **MODEL PAPER** **Max Marks: 50**

SECTION-A

Answer any SIX questions **6 x 3 = 18M**

1. Explain Interval Estimation
2. Explain Null Hypothesis and Alternative Hypothesis
3. Explain Type I and Type II errors
4. Distinguish between large sample tests and small sample tests
5. Write short note on F-test
6. Write about Sign test for single sample
7. Write Short note on Chi-Square Goodness of fit
8. Discuss the advantages and disadvantages of Non parametric methods
9. What is Estimate and estimator
10. What are the applications of t-test

SECTION-B

Answer any FOUR questions **4 X8=32M**

1. Explain the criteria of a good estimator
2. State and Prove NP-Lemma
3. What is Testing of Hypothesis? Write procedure for testing of Hypothesis?
4. Explain the large sample test for equality of two means
5. Explain chi-square test for independence of attributes.
6. Explain the difference between parametric tests, Non-parametric tests?
7. Explain Median Test

	Government College (Autonomous) Rajahmundry	**Program & Semester** III BA.(V Sem) **Paper**-VI			
Course Code STT167	**TITLE OF THE COURSE THEORY OF SAMPLING**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	FUNCTIONS OF STATISTICS	0	4	3	3

Course Objectives:

Objective: The aim of this paper is to introduce you to the statistical aspects associated with the design and analysis of sample surveys, and to develop your understanding of the principles and methods used to design survey sampling schemes. Basic theory underpinning survey inference will be introduced, focusing on methodology for survey-based estimation for population totals and related quantities for some standard sample designs

Outcomes:

On Completion of the course, the students will be able to-	
CO1	**Learn about basics of sampling**
CO2	**Learn about sample survey**
CO3	Learn about Simple Random Sampling
CO4	**Learn about Stratified sampling**
CO5	**Learn about Systematic sampling**

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit-I

Basics of Sampling: Population, sample, sampling versus census, sample survey meaning, Sampling and Non-sampling errors, Limitations of sampling

Principle steps in a sample survey. Types of sampling- Simple random sampling, Stratified random sampling, Systematic sampling. Cluster Sampling

Unit-II

Simple Random Sampling method: SRSWR, SRSWOR, Random number table method and lottery system method. Sample mean is an unbiased estimate of population mean, sample mean of variance.

Unit-III

Stratified Random Sampling: Meaning of Stratified random sampling, merits and demerits. Definitions of Proportional and Optimum allocations**.**

Unit-IV

Systematic Random Sampling: Definition of systematic random sampling. Comparison of SRSWOR (problem), stratified and systematic samplings.

Unit-V

Other Sampling: Definition of Cluster Sampling and its uses and multi stage Sampling concept

Textbooks:

1 Statistical methods-S.P.Gupta

2 Fundamentals of statistics-Goon Gupta and Das Gupta Vol I and Vol II

Reference books:

1. **Statistical methods-S.P.Gupta**
2. **Fundamentals of statistics-Goon Gupta and Das Gupta Vol I and Vol II**
3. **Anuvarthitha Sankyaka Sastramu – Telugu Academy book.**
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Web Links

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CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	2	2	2	3	2	2	3	2	3	2	2	2	2
CO2	2	3	3	2	2	2	2	3	2	3	2	2	2
CO3	2	2	2	3	3	2	2	2	2	3	3	2	2
CO4	3	2	3	2	2	2	2	2	3	2	2	3	2
CO5	3	2	2	3	2	2	2	2	2	3	2	3	2

	Government College (Autonomous) Rajahmundry	Program & Semester III BA (V Sem) Paper-VI			
Course Code STT167	**TITLE OF THE COURSE** **THEORY OF SAMPLING**				
Teaching	Hours Allocated: (**Lab**)	L	T	P	C
Pre-requisites:	Basic knowledge in Statistical inference	0	0	3	2

Objectives

The aim of this paper is to introduce you to the statistical aspects associated with the design and analysis of sample surveys, and to develop your understanding of the principles and methods used to design survey sampling schemes. Basic theory underpinning survey inference will be introduced, focusing on methodology for survey-based estimation for population totals and related quantities for some standard sample designs

Practical's-Semester-V
Conduct any 6 Practical's
Practical's-Semester-V

1. Estimation of Population mean in SRSWR
2. Estimation of population variance in SRSWR
3. Estimation of population mean in SRSWOR
4. Estimation of population variance in SRSWOR
5. Comparison of SRSWOR with optimum and proportional allocations
6. Comparison of SRSWOR, stratified and systematic samplings.

Reference books:

1. **Statistical methods-S.P.Gupta**
2. **Fundamentals of statistics-Goon Gupta and Das Gupta Vol I and Vol II**
3. **Anuvarthitha Sankyaka Sastramu – Telugu Academy book.**
4. **Applied Statistics-V.K.Kapoor & S.C.Gupta**
5. **Applied Statistics-Parimal Mukhopadhyay.**

Virtual Lab Links:

1. **https://youtu.be/7H3JFH3IjB0**
2. **https://youtu.be/BGE5Y6TXPUQ**
3. **https://youtu.be/jkfwVH0foMw**

GOVERNMENT COLLEGE (A), RAJAMAHENDRAVARM

III B.A. SEMESTER: V 2021-22

Paper VI- Theory of Sampling

Time: 2 1/2hrs **MODEL PAPER** **Max Marks: 50**

SECTION-A

Answer any SIX questions **6x3= 18M**

1. **Write short note on Sampling?**
2. **Explain the limitations of Sampling**
3. **Explain Questionnaire and Schedule**
4. **Explain about Census method**
5. **Define SRSWR and SRSWOR**
6. **Explain Stratified sampling**
7. **What are merits and demerits of Systematic sampling**
8. **Stratified sampling vs. Systematic Sampling**
9. **Define Cluster Sampling**
10. **Define Multi Stage sampling**

SECTION-B

Answer any FOUR questions **4 x8=32M**

11. **What is Sample Survey? What are the main steps involved in a sample survey?**
12. **Explain about different types of sampling**
13. **Discuss sampling and non-sampling errors**
14. **Explain the methods of drawing Simple Random Sampling With Replacement**
15. **Explain types of allocations in stratified sampling .Write Merits and demerits of it?**
16. **Explain systematic sampling with suitable example and how do you compare Systematic sampling with SRSWOR?**
17. **Define Simple Random Sampling. Show that sample mean is an unbiased estimator of Population mean in SRSWOR**

Government College [A+] Rajahmahendravaram

CBCS SYLLABUS (Semester Wise) 2021-22
III B.A. Statistics/Semester-VI
(Non-Mathematics Combination)
Applied Statistics (ELECTIVE-1)
Paper –VII-A

Total hrs per week: 04 **Total credits: 03**

Unit-I

Time series: Meaning components, trend- graphical, semi-averages, straight line, parabola, moving average methods. Seasonal indices methods- simple averages –ration to trend, ratio to moving average, link relatives methods and simple problems.

Unit-II

Index Numbers: Meaning and Definition of index Numbers Problems involved in Index Numbers ,types of Index Numbers, Criteria of Good index numbers, Cost of living and wholesale Index numbers and simple problems

Unit-III

Vital Statistics: Meaning, definition, uses, source of vital statistics – registration method, Census method Death rates-, Crude Death Rates – Age Specific Death Rate, Standardized Death rates Birth rates Crude Birth Rate, Age Specific Fertility Rate, General Fertility Rate, Total Fertility Rate

Unit-IV

Reproductive rates: Gross reproductive rate and net Reproductive rate, Life tables and Abridged life tables

Unit –V

Official Statistics: Functions and organization of CSO and NSSO, Agricultural Statistics , Area and Yield Statistics

Reference Books:

1. Statistical methods-S.P.Gupta
2 Fundamentals of statistics-Goon Gupta and Das Gupta Vol I and Vol II
3. Anuvarthitha Sankyaka Sastramu – Telugu Academy book.
4. Applied Statistics-V.K.Kapoor & S.C.Gupta
5. Applied Statistics-Parimal Mukhopadhyay.

PRACTICALS:

1. Birth rates
2. Death rates
3. Trend-Straight line
4. Seasonal indices-Simple Average
5. Life Table-1
6. Life Table-2

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A Statistics/Semester-VI

(With Mathematics Combination)

Applied Statistics (ELECTIVE-1)

Paper –VII-A

MODEL QUESTION PAPER (THEORY)

Time: 2 1/2 hrs **Max Marks: 50**

SECTION-A

Answer any SIX questions. **5 x 4= 20M**

1 **Explain Total Fertility Rate and Age Specific Fertility Rate**

2 **Explain Abridged life tables**

3 **Explain the determination of trend by Semi averages method**

4 **Explain mathematical models in Time series**

5 **Explain NSSO**

6 **Explain Cost of living Index Numbers**

7 **Explain Force of Mortality**

8. **Describe a Life table**

SECTION-B

Answer any FOUR questions **3x10=30M**

9. **Explain Vital statistics. What are the sources of vital statistics? Explain**

10. **Explain Reproductive rates**

11. **Explain the construction of life tables**

12. **Explain the various components of time series.**

13. **Explain the Problems involved of construction of Index numbers**

14. **Explain CSO and Its functions**

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CBCS SYLLABUS (Semester Wise) 2021-22
III B.A. Statistics/Semester-VI
(Non-Mathematics Combination)
Demography (ELECTIVE-2)
Paper –VII-B

Total hrs per week: 04 **Total credits: 03**

Unit-I:

Introduction of demography nature and scope, Brief history of the Development of demographic work in India, Evolution of Indian census 1872 – 1981 Rates and ratios standardization of rates.

Unit-II:

Techniques of measuring mortality factors effecting mortality

Unit-III:

Techniques of measuring fertility – factors effecting fertility

Unit-IV:

Life tables, components of RT and its uses.

Unit-V:

Population growth medals – linear, exponential.

Reference books:

1. B.D. Misra, The study of population
2. D.J. Bogue: Principles of demography
3. Sarma P.V.S.: Statistical techiniques in population studies (Telugu Academy)

PRACTICALS:

1. Calculation of crude death rate, crude birth rate, sex ratio, child women rate
2. Drawing of age sex pyramid
3. Measures of mortality – infant mortality standardized mortality rate
4. Measures of fertility general fertility rate, age specific rate, total fertility rate
5. Gross reproduction rate and net reproduction rate
6. Life tables
7. Growth models linear
8. Growth models exponential the end

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A Statistics/Semester-VI

(Non- Mathematics Combination)

DEMOGRAPHY (ELECTIVE -2) Paper –VII-B

MODEL QUESTION PAPER (THEORY)

Time: 2 1/2 hrs **Max Marks: 50**

SECTION-A

Answer any FIVE questions. **5x 4= 20M**

1. **Explain rates and ratios**
2. **Explain standardization rates**
3. **Explain mortality**
4. **Explain fertility**
5. **Explain the uses of RT**
6. **Describe the life table**
7. **Describe the purpose of growth models**
8. **Explain about Census**

SECTION-B

Answer any THREE questions. **3x 10 = 30M**

9. **Explain the nature and scope of Demography.**
10. **Explain the techniques of measuring mortality**
11. **What are the various factors affecting mortality? Explain**
12. **Explain the techniques of measuring fertility**
13. **What are the various factors affecting fertility? Explain**
14. **Explain about life tables**

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A. Statistics/Semester-VI

(Non-Mathematics Combination)

Stochastic Processes and its applications (ELECTIVE-3) Paper –VII-C

Total hrs. Per week: 04 **Total credits: 03**

Unit-I:

Definition of Stochastic Processes Classification of Stochastic processes according to time parameter and state space examples of stochastic processes definition of stationary process stationary process with independent increments

Unit-II:

MarkovChain- definition,Examples,transitionprobabilitymatrix, Chapman- Kolmogorovequation, Randomwalk.

Unit-III:

ClassificationofstatesofMarkovchain-Stationary and limit distribution for a Markov-ChainExistence of the limitingdistribution

Unit…IV:PoissonProcess-Simplepropertiesitsconnectiontoexponentialdistribu – tion Birth death process(Conceptonly)Simple-problems

Unit-V:

Simple queuing models M/M/1, M/M/S – understationarycondition, simple problems

Books for study:

1. **B.D. Misra, The study of populationMedhi.J.(1982):StochasticProcesses,NewAgeInternational(P)Ltd**
2. **Ross S.M. (1983): Stochastic Processes, JohnWiley.**
3. **Srinivasan.S.K. and Mehta.K.M. (1976): Stochastic Processes, Tata McGraw Hill Pub CompLtd**

Books for Reference:

1. **Karlin S. and Taylor H.M. (1975): A first course in Stochastic Processes, AcademicPress.**
2. **CinlarE.(1975):IntroductiontoStochasticProcesses,Prentice**

PRACTICALS: Conduct any 6 practical's

1. **Stationary Problems**
2. **State spaces**
3. **Markov Chain**
4. **Markov Chain –II**
5. **Poisson Process**
6. **Branching Process**
7. **Queuing Mod**

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A Statistics/Semester-VI

(Non- Mathematics Combination)

Stochastic Processes and its applications (ELECTIVE -3)

Paper –VII -C

MODEL QUESTION PAPER

Time: 2 1/2 hrs. **Max Marks: 50**

SECTION-A

Answer any FIVE questions. **5 x 4= 20M**

1. **What is Stochastic Process?**
2. **Explain State Spaces**
3. **Explain Stationary Process**
4. **Explain Markov Chain**
5. **Explain the uses of Markov chain**
6. **.Describe the Branching Process**
7. **Describe the purpose of Poisson Process**
8. **Explain about Queuing Theory**

SECTION-B

Answer any THREE questions. **3x 10 = 30M**

9. **Explain the nature and Scope of Stochastic Process.**
10. **Explain the application of stochastic Process**
11. **What are the various State spaces? Explain**
12. **Explain the Random walk**
13. **What are the Poisson Process? Explain**
14. **Explain about Queuing Theory?**
15. **Explain M/M/1 M**

NAME OF THE PROGRAMME: B.A. (E.S.C & E.S.Cs)

SEMESTER: VI

TITLE OF THE PAPER: (Cluster-I(a)) Operation Research

CODE OF THE PAPER:STT149

COURSE OUTCOMES:

1) **Students would be able to know about basics of Operation research**
2) **Students would be able to know Transportation problems**
3) **Students would be able to know game theory and their problems**
4) **Students would be able to know about sequencing problem and their problem**

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A. Statistics/Semester-VI

(Non-Mathematics Combination)

Operations Research (Cluster 1,Paper 1) Paper –VIII-A1

Total hrs per week: 04 **Total credits: 03**

Unit-I:

Operations Research: Definition and scope of operations research, phases and models in OR, Linear programming problems, formulation of LPP, solving the LPP by graphical method.

Unit-II:

Game theory: Two person games, pure and mixed strategies, zero sum games finding solutions in 2x2 and 2xM games.

Unit-III:

Transportation problem: Definition of transportation problem, TPP as a special case of LPP, feasible solutions by North-West, Matrix minimum and VAM methods.

Unit-IV:

Assignment problem: formulation and description of assignment problem and its variations, Assignment problem, traveling salesman problem, Electively solution using Hungarian method.

Unit-V:

Sequencing Problem : elements of sequencing problem with jobs on two machines and their solution.

Reference Books:

1. Operations Research, S. Kalavathi, Vikas publishing house Pvt Ltd.

2. Hamdy A. Taha (1987): Operations Research – An Introduction, 4/e, Prentice Hall of India,Private Ltd, New Delhi.

3. Hillier F S and Libermann G J(2002): Introduction to Operations Research, 7th Edition, McGraw Hill

4. Kanti Swarup, P.K. Gupta and Man Mohan(2004): Operations Research, Sultan Chand and Sons, New Delhi.

Practicals:

1. **Solving LPP by graphical method**
2. **Solving the TP by NWCR, matrix minimum and VAM methods**
3. **Game theory – obtaining saddle point and pure mixed strategies**
4. **Finding solution for 2x2 and 2xm games**
5. **Optimal solution for assignment problem**
6. **Solving sequencing problem for jobs on two machines.**

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A Statistics/Semester-VI

(Non- Mathematics Combination)

OPERATION RESEARCH (Cluster 1, Paper-1) Paper –VIII-A1

MODEL QUESTION PAPER (THEORY)

Time: 2 1/2 hrs **Max Marks: 50**

SECTION-A

Answer any FIVE questions. **5 x 4= 20M**

1. **Explain the formulation of LPP**
2. **Explain general LPP**
3. **Explain the standard form of LPP?**
4. **Define feasible solution in a Transportation problem**
5. **Define unbalanced Assignment problem**
6. **How do you obtain a sequence?**
7. **Explain Assignment problem as a special case of TP**
8. **Explain Travelling salesman problem**

SECTION-B

Answer any THREE questions. **3 x 10 = 30M**

9. **Describe the definition and scope of Operation Research**
10. **Solve the following LPP by using Graphical method**

$$\text{Maximize } Z = 45X_1 + 80X_2$$
$$\text{Subject to const: } 5X_1 + 20X_2 \leq 400$$
$$8X_1 + 15X_2 \leq 432$$
$$X_1, X_2 \geq 0$$

11. **Explain Two person games and zero sum games with example**
12. **Solve the following Transportation Problem by using VAM.**

	D_1	D_2	D_3	Supply
O_1	32	30	220	1
O_2	90	45	170	3
O_3	400	200	32	5
Demand	5	2	2	9

13. **Give an algorithm for n job-2 machines problem**
14. **Solve the following Transportation Problem by using Matrix Minimum Method.**

	D_1	D_2	D_3	Supply
O_1	32	30	220	1
O_2	90	45	170	3
O_3	400	200	32	5
Demand	5	2	2	9

NAME OF THE PROGRAMME: B.A. (E.S.C & E.S.Cs)
SEMESTER: VI
TITLE OF THE PAPER:Cluster-2 (A)Statistical Computer Applications
CODE OF THE PAPER: STT154
COURSE OUTCOMES:

1) **Students would be able to know about basics of computer science**
2) **Students would be able to know about different generations of computer**
3) **Students would be able to know about MS-word and its presentations**
4) **Students would be able to know about MS-Excel, and its problems**

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CBCS SYLLABUS (Semester Wise) 2021-22
III B.A. Statistics/Semester-VI
(Non-Mathematics Combination)
Statistical Computer Applications (Cluster-1, Paper-2) Paper –VIII-A2

Total hrs per week: 04 **Total credits: 03**

Unit-I:

Introduction to Operating System: Computer Generations, Structure of an Operating system The purpose of Operating systems –Features of an Operating systems-Types of an Operating Systems –Proving a User interface-Running Programs-managing Hardware-Enhancing an OS utility software.

Unit-II:

MS Word: Starting word, Creating new documents when Word is running, Standard tool bar, Formatting tool bar, File menu, Edit and manipulating text, Page setup, tab keys ,undo and redo commands, bullets and numbered list, Exiting word, Inserting page breaks, Inserting headers and footers, Inserting page numbers.

Unit-III:

MS EXCEL: Save and print workbooks, Enter and edit data. Modify a worksheet and workbook. Learn to use functions and formulas. Create and edit charts and graphics, Filter and sort table data and charts. Import and Export data. Excel Basics Work with Cells and Worksheets

Unit-IV:

MS POWER POINT: Basics, Creating presentations-auto content wizard, design template. Working with menus-file menu, edit menu, view menu, insert menu, format menu, tools menu, slide show menu, windows, help Cut, Copy, Paste slides, saving a presentation, closing a presentation, slide numbering, printing presentation. Applying a design to presentation, Slide transition.

UNIT-V:

INTERNET AND ITS APPLICATIONS:

History of Internet, Basics of Internet and its applications, Search Engines definition and its types and their history create Webpage on internet and usage and access of Internet

Prescribed Books:

1. **Working in Microsoft Office by Ron Mansfield, Tata McGraw Hill.**
2. **Advanced Microsoft office 2000 by Meredith Flynn & Nita rutkosky, BPB publications.**
3. **Fundamentals of computers by V.Rajaraman,PHI**
4. **Computer System Architecture by M.Morris Mano**
5. **Operating System by Dhumdhere**

PRACTICALS:

1. **Design a visiting card for a managing director of a company as per the following specification. Size of the visiting card should be 31/2 "X2"**
2. **Name of the company with a big font using word art. Phone number, Fax number and Email address with appropriate left and right margins and page number in the footer and name on top right side.**
3. **Prepare a resume of an MCA graduate with proper headings, appropriate left and right margins and page number in the footer and name on top right side.**
4. **Create an interview call letter as the main document and create 8 records for 8 persons. Use mail merge to create letters for 6 selected persons among the 8.**
5. **Write a macro to format a document as below.**
   i) **Line spacing is two**
   ii) **Paragraph indent of 0.8**
   iii) **Justification formatting style.**
   iv) **Arial font of 8 point size.**
6. **Filter and sort table data and charts.**
7. **Work with Cells and Worksheets Calculation**
8. **Make a Presentation of a slide for a given DATA**
9. **Make a Power Point presentation about our college with statistical DATA**

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A. Statistics/Semester-VI

(Non-Mathematics Combination)

Statistical Computer Applications (Cluster-1, Paper-2) Paper –VIII-A2

MODEL QUESTION PAPER (THEORY)

Time: 3 hrs **Max Marks: 60**

SECTION-A

Answer any FIVE of the following questions. : **5 x4=20M**

1. Define Operating System and its types?

2. What are the generations of Computer?

3. Write about Headers and Footers?

4. Explain following terms

URL,WWW,HTML,HTTP

5. Write Mathematical tools in MS-Excel?

6. Write tools in MS-PowerPoint?

7. Write about commands in MS-Word?

8. Write about UNDO and REDO

SECTION-B

Answer any THREE of the following questions. **3 x 10 = 30M**

9. Write any 10 short cut keys in MS Word?
10. Write about Search Engines?
11. Write about the internet its basics?
12. Write briefly about concept of MACRO
13. Explain the concept of Operating system through Diagram?
14. Explain the procedures for import and export data in MS-Excel?

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A. Statistics/Semester-VI

(Non-Mathematics Combination)

Official Statistics and Design of Experiments (Cluster-2, Paper-1)

Paper –VIII-B1

Total hrs per week: 04 **Total credits: 03**

Unit-I:

Official Statistics: National income, methods to estimate national income, problems involved in estimating national income, agricultural statistics.

Unit-II

Area, yield of statistics, Functions and organization of CSO, NSSO

Unit-III

Analysis of variance: Meaning, definition, assumptions, one way and two way classifications.

Unit-IV

Principles of design of experiments: Principles of experiment, Completely Randomized design, Randomized block design and Latin square design.

Unit-V

Missing plot techniques: RBD, LSD, Concepts of Factorial experiments 2^2 & 2^3

Text Books:

1. **Fundamentals of Statistics: Goon Gupta, Das Gupta**
2. **Applied Statistics-Parimal Mukhopadhyaya**

Reference Books

1. **Design of Experiments by Gupta Kapoor:**
2. **Applied Statistics-V.K.Kapoor & S.C.Gupta**
3. **Anuvarthitha Sankyaka Sastramu – Telugu Academy book.**

PRACTICALS:

1. **ANOVA-equal one way classifications**
2. **ANOVA-unequal one way classifications**
3. **ANOVA-Two way classifications**
4. **CRD**
5. **RBD**
6. **LSD**

GOVERNMENT COLLEGE (A+) , RAJAHMAHENDRAVARM

IIIB.A. SEMESTER:VI CBCS-2021-22

Official Statistics and Design of Experiments (Cluster-2, Paper-1)

Paper-VIII-B1

(For Non-Mathematics Combination)

Time; 2 1/2hrs **MODEL PAPER** **Max Marks: 50**

SECTION-A

Answer any FIVE of the following questions. **5 x 4 = 20M**

1. **Explain National Income**
2. **Explain Agricultural statistics**
3. **Explain Yield statistics**
4. **Write the uses of SQC**
5. **Explain specification limits**
6. **Explain C Chart**
7. **Describe a Life table**
8. **Define Treatment**

SECTION-B

Answer Any THREE questions: **3x10=30M**

9. **Discuss the problems involved in measuring National Income.**
10. **Discuss the various methods to estimate the National income**
11. **Explain the functions of C.S.O**
12. **Explain the functions of N.S.S.O**
13. **Explain ANOVA one way classification**
14. **Define and Explain ANOVA? Write its assumptions**

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A. Statistics/Semester-VI

(Non-Mathematics Combination)

Mortality and Actuarial Statistics (Cluster-2, Paper-2)

Paper –VIII-B2

Total hrs per week: 04 **Total credits: 03**

Unit-I:

Rates and Ratio's in Mortality- Exposed to Risk Aggregate Rates- Life Year and other rate Intervals

Unit-II

Select Rates – Multiple Decrement Tables – Its role in Actuarial Statistics

Unit-III

Principles and Purposes of Graduation – The Graphic Method - Graduation by reference to a Standard table.

Unit-IV

Compression of Rates of Selection – Social and Economic factors in Mortality – Population Structures and Projections – Age Sex Pyramid

Unit-V

U.K. Assured lives and Annuitants Mortality.- The English life Tables – Individual Policy Sickness Experience – Indian Assured Lives Mortality.

Recommended Books:

1. Benjamin, B and Pollard: Analysis of Mortality and other Actuarial Sciences Published by Heinemann8,11,12,15,19.
2. Special Note: Exposed to Risk using the Direct and Census methods including mortablity rates by age and Multiple Decrements.
3. Special Note: Population Structures and Projections -1990 Edition
4. English Life Tables No. 14-1980/82 HMSC: Chapters 1,

Practicals:

1. Rates and Ratios in Mortality
2. Multiple Decrement Tables
3. Graphic Method
4. Age Sex Pyramid
5. Annuitants Mortality

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A. Statistics/Semester-VI

(Non-Mathematics Combination

Mortality and Actuarial Statistics (Cluster-2, Paper-2)

Paper –VIII-B2

Time; 2 1/2hrs **MODEL PAPER** **Max Marks: 50**

SECTION-A

Answer any FIVE questions: **5 x4 = 20M**

1. **Explain about life year and other rate intervals?**
2. **Explain about Select Rates?**
3. **Explain the Graphic Method?**
4. **Explain Age Sex Pyramid?**
5. **Describe about English Life tables?**
6. **Explain about Mortality?**
7. **Explain the need of Actuarial Statistics?**
8. **Explain about Risk Aggregate Rates?**

SECTION-B

Answer any THREE questions: **3x10=30M**

9. **Explain about Rates and Ratio's in Mortality?**
10. **Explain about life year and other rate intervals?**
11. **Explain Multiple Decrement Tables**
12. **What is the role of Multiple Decrement Tables in Actuarial Statistics?**
13. **Explain the Principles and Purposes of Graduation?**
14. **What do you mean by Compression of Rates of Selection**

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A. Statistics/Semester-VI

Testing of hypothesis(Cluster-3, Paper-1)Paper –VIII-C1

(Non-Mathematics Combination)

Total hrs. Per week: 04 **Total credits: 03**

Unit-I:

Statistical Hypothesis Simple and composite hypothesis, Null and Alternative Hypothesis Two types of errors Critical region p-value Power of a test Most powerful test Neyman Pearson Lemma Simple problems.

Unit-II

Uniformly most powerful tests definition and simple – applications – Likelihood Ratio tests Definition and LR tests for means and variance (one and two sample problem only).

Unit-III: Test of significance: Exact and Asymptotic tests based on Normal, Student's t, Chi- squareandF-distributionfortestingthemeans,proportions,variancesandcorrelation coefficient Chi-squaretest

Unit-IV: **SequentialtestsNeed forsequentialtests ' Walds SPRT with – illustrations Approximate OC and ASN functions for tests regarding parameters of binomial and normaldistributions.**

Unit V- Non-parametric methods: Sign test Wilcoxon Signed rank test- Mann Whitney U test - Median test - Run test Chi-square goodness of fit test - Kolmogrov-Smirnov test Kruskal Wallistest.

Books For Study:

1. **Mood A M, Graybill F A and Boes D C(1974): Introduction to Theory of Statistics, McGraw Hill Publishing Co., NewYork**
2. **Hogg R V and Craig A T(1998): Introduction to Mathematical Statistics, McGraw Hill Publishing Co., NewYork.**
3. **Goon A.M, Gupta M.K., Das Gupta B. (1980): An Outline of Statistical Theory, Vol. 2, 6th revised edition, World Press,Calcutta.**

Practical's:

1. **Testing of Hypothesis**
2. **Neymann Method**
3. **LR tests**
4. **Chi-Square Distribution**
5. **Non-Parametric Tests**
6. **Non-Parametric Tests-II**

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CBCS SYLLABUS (Semester Wise) 2021-22

III B.A. Statistics/Semester-VI

Testing of Hypothesis (Cluster-3, Paper-1) Paper –VIII-C1

(Non-Mathematics Combination)

Time; 2 1/2hrs **MODEL PAPER** **Max Marks: 50**

SECTION-A

Answer any FIVE of the following questions: **5 x4 = 20M**

1. **Explain about Testing of Hypothesis?**
2. **Explain about Hypothesis types?**
3. **Explain the LR test?**
4. **Explain Exact Sampling Distributions?**
5. **Describe Variance Ratio Test?**
6. **Explain about RUN test?**
7. **Explain the need of Hypothesis?**
8. **Explain about Non-Parametric Test?**

SECTION-B

Answer THREE questions: **3x10=30M**

9. **Explain Terms involved in Hypothesis?**
10. **Explain about most powerful tests?**
11. **Explain Nyman Theorem?**
12. **What is the role of Non parametric tests in Statistics**
13. **Explain Median Test?**
14. **What do you mean by Compression of Rates of Selection?**

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CBCS SYLLABUS (Semester Wise) 2021-22
III B.A. Statistics/Semester-VI
Decision Making Analysis (Cluster-3, Paper-2) Paper –VIII –C2

Total hrs. Per week: 03 **Total credits: 03**

Unit 1

DecisionProblem:Goalsandobjectives,ConflictbetweenPossiblesolutions Constraints-FeasiblesolutionsObjectivefunction Costs and benefits,notional and criteria for optimality.

Unit 2

Steps in decision-making: Determining objective(s), identifying alternative feasible solutions, determining (expected) costs and benefits associated with a feasible solution, developing a measure of effectiveness, finding the optimal solution Sensitivityanalysisandpost-optimalityproblems, controlling asolution.

Unit 3

Structureofdecision,Development of thepay-offmeasure – Bernoulli an utility Expectedvalue, Pay-off without anaturalmeasure, Standardgamble, Strategies and statesofnature Analysisofdecisions Pay-offmatrix Decisions under certainty, uncertainty, riskandcompetition, Optimality criteria of pessimism, optimismandregret A decision amongdecisioncriteria Laplacecriterion.

Unit 4

Sequentialdecisions-Decisiontrees,Informal analysis – ofdecisiontrees-Cutting decisiontreesDecision making using expected money valueandutility. Expected profit withperfectinformation Value ofsampleinformation. Expected net gain due tosampling

Unit 5

Decision problemsinmarketing Brand-loyaltymodel – Brand-share model Pricingproblem Competitivebidding Allocation of advertisingfunds Decision problemsin finance Investmentdecisiontrees Riskanalysis Portfolio selection Dividendpolicy

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CBCS SYLLABUS (Semester Wise) 2021-22
III B.A. Statistics/Semester-VI
Decision Making Analysis (Cluster-3, Paper-2) Paper –VIII–C2
MODEL QUESTION PAPER THEORY

Time: 2 1/2 hrs. **Max Marks: 50**

SECTION-A

Answer any Five questions. **5 x 4 = 20M**

1. Explain Decision Problem

2. Explain Criteria for optimality

3.Explain Structureofdecision

4. Explain Riskanalysis

5. Explain Dividendpolicy

6. Give the controlling asolution

7. Explain Optimality criteria of pessimism

8. Explain Standardgamble

SECTION-B

Answer any THREE questions **3X10=30M**

9.Explain Scope and objectives of Decision Making

10. Explain feasiblesolutionsObjectivefunctionCosts and benefits
11.Explain determining costs and benefits associated with a feasible solution
12.Define Sequentialdecisions-Decisiontrees,Informal analysis ofdecisiontrees-Cutting decisiontrees
13. Describe Pay-offmatrix Decisions under certainty
14.Expected profit withperfectinformation Value ofsampleinformation

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CBCS SYLLABUS (Semester Wise) -2021-22

III B.A. Statistics/Semester-VI

PROJECT WORK

Guidelines for the Project work:

1. **A project work shall be normally offered in the third year (sixth semester).**
2. **A project work shall be assessed for a maximum of 100 marks**
3. **A project may be undertaken by a group of students and the maximum number of students in a team shall not exceed five.**
4. **A project work shall be supervised by a faculty member assigned by the Head of the Department.**
5. **There shall be an internal examiner for the evaluation of the project work.**
6. **A project work should encourage a student to interact with the end user.**
7. **A project work should be chosen such that there is enough scope to apply and demonstrate the statistical techniques learnt in the course.**
8. **The students should submit a report above their project work before the last working day of the concerned semester. Even if a team of students undertake the same project, the project report submitted by each member of the team should be separate.**
9. **A project work report shall clearly state the problem addressed, the methodology adopted, the assumptions and the hypotheses formulated, any previous references to the study undertaken, statistical analyses performed and the broad conclusion drawn.**