

***GOVERNMENT COLLEGE (AUTONOMOUS)***

***RAJAHMUNDRY***

***DEPARTMENT OF STATISTICS***

***HEARTY WELCOME TO ALL  
THE BOARD OF STUDIES  
MEMBERS & STUDENTS***

***Syllabus Discussion  
2021-2022***

**Government College (Autonomous)  
Rajahmendravaram  
NAAC Accredited at 'A+' Grade**



**DEPARTMENT OF ACTUARIAL SCIENCE**

**B.Sc. (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**

<b>Sl. No.</b>	<b>Name</b>	<b>Member</b>
<b>1</b>	<b>Dr. G.S. Moses Head, Dept of Statistics DNR College(Autonomous) Bhimavaram</b>	<b>University Nominee</b>
<b>2</b>	<b>Dr. D.V. Ramana Murthy Head, Dept of Statistics SKVT College Rajahmundry</b>	<b>Local Subject Expert</b>
<b>3</b>	<b>Sri M. Kodandaram LIC of India Rajahmundry</b>	<b>Industrial Nominee</b>
<b>4</b>	<b>Sri K. Ashok Lecturer in Statistics PR Govt College((A) Kakinada</b>	<b>Subject Expert</b>
<b>5</b>	<b>Dr D.V.Nagaeswara Rao Head, Dept. of Economics Govt. College(A) Rajamahendravaram</b>	<b>Member</b>
<b>6.</b>	<b>Dr K.atna Manikyam Head, Dept. of Commerce Govt. College(A) Rajamahendravaram</b>	<b>Member</b>
<b>7.</b>	<b>Mr. Ch. Naresh Guest faculty in Statistics Govt college(A) Rajamahendravaram</b>	<b>Member</b>
<b>8.</b>	<b>Mr. J. Naga Sriram Guest faculty in Statistics Govt College(A) Rajamahendravaram</b>	<b>Member</b>
<b>19</b>	<b>Ms K.Suneetha Guest faculty in Statistics Govt College(A) Rajamahendravaram</b>	<b>Member</b>
<b>10</b>	<b>Student Members (i) Sk. Hafeez (ii) A. Sirisha (iii) G. Aasha Devi (iv) A Swathi</b>	

## 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	vrohiniikumari@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
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Dr.B.Venkata Ram, Lecturer	SSBN Degree College,Ananthapur	9440410474	gsd.atp@gmail.com
Dr.V.Munnaih, Lecturer	PVKN.GOV.T.College,Chitturu	924852594	drvmstats@gmail.com
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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
Sri.CH.Naresh,Lecturer	GOVT.College(A),Rajahmundry	8297826683	nareshchitturi27@gmail.com
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**

An online meeting was conducted for Board of Studies on 16-09-2021 from 11.00 to 12.00 for all the semesters for the subjects Statistics and Actuarial Science under the chairmanship of Dr N.Madhavi (Lecturer-in-charge, Dept of Statistics) with the committee 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	
4	Sri K. Ashok Lecturer in Statistics PR Govt College((A) Kakinada	Subject Expert	
5	Dr K. Ratna Manikyam Head, Dept. of Commerce Govt. College(A) Rajamahendravaram	Member	
6.	Dr D.V.Nagaeswara Rao Head, Dept. of Economics Govt. College(A) Rajamahendravaram	Member	
7	Mr. Ch. Naresh Guest faculty in Statistics Govt college(A) Rajamahendravaram	Member	
8	Mr. J. Naga Sriram Guest faculty in Statistics Govt College(A) rjy	Member	

9	<b>Ms K.Suneetha</b> <b>Guest faculty in Statistics</b> <b>Govt College(A)</b> <b>Rajamahendravaram</b>	<b>Member</b>	
10	<b>Student Members</b> <b>(i) Sk. Hafeez</b> <b>(ii) A. Sirisha</b> <b>(iii) G. Aasha Devi</b> <b>(iv) A Swathi</b>		

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

- 1. Syllabus of I,II ,III,IV,V and VI 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**

## **B.Sc. (ACTUARIAL SCIENCE)**

<b>S.NO</b>	<b>SEMESTER</b>	<b>TITLE OF THE PAPER</b>	<b>COURSE CODE</b>
1	I	BASICS OF BUSINESS ECONOMICS	
2	II	Basics of Financial Mathematics	SAS101
3	III	BASICS OF FINANCIAL ACCOUNTANCY	
4	IV	Paper-IV --Survival Models	SAS102
5	IV	Paper-V - BASICS OF LIFE CONTINGENCY	SAS103
6	V	BASICS OF LIFE CONTINGENCY	SAS103
7	V	BUSINESS COMMUNICATION	SAS104
8	IV	Principles and Practice of Insurance	SAS115
9	VI	ELECTIVE-1:Mortality and other Actuarial statistics	SAS116
10	VI	ELECTIVE-2:Actuarial Statistics	SAS117
11	VI	ELECTIVE-3:Advanced Business Communication	SAS105
12	VI	Life contingency-1	SAS106
13	VI	LifeContingency-2	SAS107
14	VI	Project	SAS108
15	VI	Principles of Insurance	SAS109
16	VI	Practice of Insurance	SAS110
17	VI	Project	SAS111
18	VI	Statistical Techniques for Research methods	SAS112
19	VI	Survival Analysis and Bio-statistics	SAS113
20	VI	Project	SAS114

**B.SC ACTUARIAL SCIENCE SYLLABUS 2021-22**

**FIRST YEAR**

Semester	Paper	Subject	Hrs.	Credits	IA	ES	Total
Semester I	Paper-I	Basics of Business Economics	6	5	50	50	100
Semester II	Paper-II	Basics of Financial Mathematics	6	5	50	50	100


**SECOND YEAR**

Semester III	Paper-III	Basics of Financial Accountancy	6	5	50	50	100
Semester IV	Paper-IV	Survival Models	6	5	50	50	100
Semester IV	PAPER-V	Basics of Life Contingency	6	5	50	50	100

**THIRD YEAR**

Semester V	Paper-V	Basics of Life Contingency	5	5	50	50	100
	Paper-VI	Business Communication	5	5	50	50	100
Semester VI*	Paper-VII	Mortality and other Actuarial statistics Or Actuarial Statistics	5	5	50	50	100
Semester VI*	Cluster-1	Life contingency-1	5	5	50	50	100
		LifeContingency-2	5	5	50	50	100
		Project	5	5	50	50	100
	Cluster-2	Principles of Insurance	5	5	50	50	100
		Practice of Insurance	5	5	50	50	100
		Project	5	5	50	50	100



	<b>Government College (Autonomous) Rajahmundry</b>	<b>Program &amp; Semester I B.Sc. (I Sem)</b>			
Course Code	<b>TITLE OF THE COURSE</b> <b>Basics of Business Economics</b>				
Teaching	Hours Allocated: 60 ( <b>Theory</b> )	L	T	P	C
Pre-requisites:	To have knowledge in Mathematics, Statistics and Business Studies.		6	0	3

### Course Objectives:




The Objective of this course is to

1. make the students aware of Economics concepts
2. know about Business Economics
3. Describe the contributions of the main economic thinkers and their connections to current methodological developments
4. To describe the methodology in Economics.

### Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	• Be aware of fundamental concepts of Economics.
CO2	• Differentiate Micro and Macro Economics
CO3	• Understand the concept of Elasticity of demand
CO4	• Apply the law of marginal utility
CO5	• Understand various markets and pricing
CO6	• Measure National Income
CO7	• Understand the Macro Economics policies
CO8	• Be aware of Insurance and Stock exchanges
CO9	• Know the features, phases and theories of trade cycles

### Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	
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**Syllabus:**

**UNIT – I (12 Hours)**

Nature and scope of economics – Methodology in economics – Concepts of Demand and Supply – Elasticity of demand – price, income, cross.

**UNIT – II (12 Hours)**

Cardinal and Ordinal approaches – Law of Diminishing Marginal utility – Indifference curve – Consumer's equilibrium – Consumer surplus

**UNIT – III (12 Hours)**

Market forms – Perfect and Imperfect Markets – Features of various markets – Monopoly, Monopolistic Competition, Oligopoly – Notion of Controlled and Administered prices.

**UNIT – IV (12 Hours)**

Concepts of Payback period – Average Annual Rate of return – Net Present Value – Internal Rate of Return criterion – Elements of Social Cost Benefit analysis

**UNIT – V (12 Hours)**

National income and social accounts – concept and measurement of national income – Introduction to Macro Economic policy and Money and monetary institutions.... RBI, Commercial banks – Concept of Insurance, Stock exchanges, SEBI, IRDA. Nature, characteristics and phases of Trade cycles – Control of Trade Cycles.

**Textbooks:**

1. A. Koutsoyiannis, Modern Microeconomics – Macmillan, London.
2. A. W. Stonier and D.C. Hague, A Text book of Economic Theory - ELBS & Long man Group, London.
3. P. N. Chopra, Macroeconomics, Kalyani Publishers, Ludhiana, 2014

### Reference books:

1. CT-7 study material of Institute of Actuaries of India
2. Ackley (1976) Micro Economics – Theory and policy, Macmilan publishing company, Newyork.
3. Gupta S.B(1994), Monetary Economics, S.Chand& Co., New Delhi.4. Heijdra B.J. and F.V.Ploeg (2001) Foundations of Modern Economics, Oxford university Press, Oxford.
4. Telugu Academy Publications on Microeconomics.
5. Microeconomics, Spectrum Publishing House, Hyderabad, 2017.
6. Macroeconomics, Spectrum Publishing House, Hyderabad, 2016
7. Central Statistical Organization, National Accounts Statistics.

### WebLinks:

1. <https://studiousguy.com/nature-and-scope-of-economics/>
2. <https://businessjargons.com/economics.html>
3. <https://ccelms.ap.gov.in/adminassets/docs/22072019070020-NATURE.pdf>
4. <http://www.ddegjust.ac.in/studymaterial/bba/bba-103.pdf>
5. <https://www.vedantu.com/commerce/difference-between-cardinal-and-ordinal-utility>
6. <https://theintactone.com/2019/10/13/me-u1-topic-7-cardinal-and-ordinal-approaches-to-consumer-behaviour/>
7. <https://www.vedantu.com/commerce/forms-of-market>
8. <https://www.investopedia.com/terms/p/paybackperiod.asp>
9. [https://www.brainkart.com/article/National-Income-and-Social-Accounting\\_37063/](https://www.brainkart.com/article/National-Income-and-Social-Accounting_37063/)
10. <https://studymateriall.com/national-income-and-social-accounting/>

### 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	3	2	2	1	3	2	2	1	2	2	2
CO2	1	2	1	3	2	3	2	3	2	1	3	2	1
CO3	3	1	2	1	2	3	1	3	1	2	2	3	1
CO4	2	3	1	3	1	3	2	1	3	2	2	2	2
CO5	2	2	1	2	3	2	2	1	1	2	2	2	1

**GOVERNMENT COLLEGE (A) RAJAMAHENDRAVARAM**  
**MODEL PAPER FOR THE YEAR 2021-2022**  
**I YEAR B.Sc. (MSAS) PAPER-I**  
**SEMESTER-I**

*BASICS OF BUSINESS ECONOMICS PAPER-1*

**Time: 2½ Hrs.**

**Max.marks:50**

**SECTION-A**

**Answer Any THREE Questions**

**4X5=20 M**

1. Nature of Economics
2. Deductive Method
3. Cardinal and Ordinal Approaches
4. Consumer's surplus
5. Controlled and Administered Prices
6. Macro-Economic Policy

**SECTION-B**

**Answer Any Three Questions**

**3X8=24 M**


7. Explain the theory of demand and its exemptions?  
(OR)
8. Explain the law of Diminishing Marginal Utility?
9. Explain the functions of RBI?  
(OR)
10. Explain the Concept of cost benefit analysis and elopement in social cost benefit analysis?
11. Explain the Concept of National Income?  
(OR)
12. Explain the Phases of Trade cycles?

**SECTION-C**

**Answer Any Three Questions**

**3X2=6M**

13. Define Demand and Supply
14. Define Oligopoly
15. What is rate of return
16. What is SEBI
17. What are Stock Exchanges

	<b>Government College (Autonomous) Rajahmundry</b>	<b>Program &amp; Semester</b> I B.Sc. (II Sem)			
Course Code  <b>SAS101</b>	<b>TITLE OF THE COURSE</b>  <b>Basics of Financial Mathematics</b>				
Teaching	Hours Allocated: 60 ( <b>Theory</b> )	L	T	P	C
Pre-requisites:	To have knowledge in Mathematics, Statistics and Business Studies.		6	0	3

### Course Objectives:

The Objective of this course is to


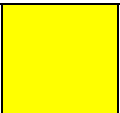
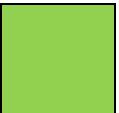
1. explain and make aware of origin and history of interest rate
2. learn various forms of interest rate
3. know the applications of interest rate in real life
4. develop understanding on the concepts associated with financial mathematics
5. have an outlook of various economic theory associated with interest rate

### Course Outcomes:

On Completion of the course, the students will be able to-

CO1	Students would be able to learn about Interest theory and related concepts of Interest theory
CO2	Students would be able to learn about annuities and Redemption policies
CO3	Students would be able to learn about discount and factors of discount rates and also learn about rate of returns
CO4	Students would be able to life tables and Insurance concept and types of insurance

### Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	
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**Syllabus:**

### **UNIT – I (12 Hours)**

Simple and Compound interest, Compound interest tables, Present Value, Normal and Effective rates of interest, Effective rate corresponding to a nominal rate and Vice-Versa, Discount and Discounted value, Varying rates of interest, Equation of Value, Equated time of payment.

### **UNIT – II (12 Hours)**

Repayment of loan by uniform installments when the frequency of installments is the same as that with which interest is convertible, Repayment of loan by uniform installments consisting of both interest and principle repayment, when the frequency of installment is different from that with which interest is convertible, Redemption of Loans by a sinking fund, Lender's sinking fund, Further consideration on redemption of loan, Capital redemption policies, Office premiums, Surrender Value.

### **UNIT – III (12 Hours)**

Nominal and Effective rates of Discount, Average interest yield on the life fund, Money weighted rate of return, Time weighted rate of return and linked internal rate of return,.

### **UNIT – IV (12 Hours)**

Column  $l_x$  , Column  $d_x$  , Column  $q_x$  , Column  $p_x$  , The probabilities of survival and death, Stationary population,  $L_x$  ,  $T_x$  , Curtate expectation of life, Complete expectation of life, Central death rate  $M_x$  , Selection and select rates, Ultimate table, Aggregate table. Construction of Mortality tables, Stages involved in construction of mortality table, The data to be used, Period of investigation, Unit of investigation, The method of investigation, Census method, application of census method to life office data, Determination of exposed to risk and deaths.

### **UNIT – V (12 Hours)**

Life Assurance premiums-General Considerations, Assurance benefits-Pure Endowment assurance, Endowment assurance, Temporary Assurance or Term assurance, Whole life Assurance, Double Endowment assurance , Increasing Temporary Assurance, Increasing Whole life Assurance, Commutation functions  $D_x$  ,  $C_x$  ,  $M_x$  , and  $R_x$  , Expressions for present values of assurance benefits in terms of Commutation functions, Fixed term (Marriage ) Endowment, Educational annuity plans

### Textbooks:

1. An Introduction to Mathematics of finance by J.J.McCUTCHEON and W.F.SCOTT

### Referencebooks:

1. Actuarial Mathematics by Bowers Gerber Hickman James Nesbitt

### WebLinks:

[https://portal.tpu.ru/SHARED/1/LEVCHENKOEAcademic/prof-eb/Uchebnoe\\_posobie.pdf](https://portal.tpu.ru/SHARED/1/LEVCHENKOEAcademic/prof-eb/Uchebnoe_posobie.pdf)

[http://cbseacademic.nic.in/web\\_material/Manuals/appliedmaths/Chapter11\\_Basics\\_Financial\\_Mathematics.pdf](http://cbseacademic.nic.in/web_material/Manuals/appliedmaths/Chapter11_Basics_Financial_Mathematics.pdf)

<https://www.trignosource.com/finance/Nominal%20and%20effective%20rate.html#:~:text=A%20nominal%20rate%20of%20means,every%20year%2C%20i.e.%20every%20month.&text=A%20nominal%20discount%20rate%20of,would%20be%20per%20time%20period.>

<https://www.healthknowledge.org.uk/public-health-textbook/health-information/3a-populations/life-tables-demographic-applications>

### 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	3	2	2	1	3	2	2	2	2	2	2
CO2	1	2	1	2	2	3	2	3	2	1	2	2	2
CO3	2	3	2	1	2	2	1	3	2	2	2	2	1
CO4	2	3	2	3	1	3	2	1	3	2	2	2	2
CO5	2	2	1	2	3	2	2	2	1	2	2	2	1

**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) 2021-22**  
**I B.Sc. Statistics/Semester-II - Actuarial science**  
**Paper – II-Basics of Financial Mathematics**  
**(MODEL QUESTION PAPER)**

**Time: 2 1/2hrs**

**Max Marks: 50**

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**SECTION-A**

Answer any **SIX** questions from the following:

**6x3 = 18M**

1. Explain Types of Interests?
2. Write about Discount and Discounted value.
3. Explain Capital Redemption Policies.
4. Define life Assurance premiums and its benefits?
5. Explain about the average Interest yield on the life fund.
6. Explain Construction of Life table.
7. Write a short note on mortality table?
8. Explain about Education Annuity plan?
9. What are Equated Time of Payments


**SECTION-B**

Answer any **THREE** questions from the following:

**4x8 = 32M**

9. Explain about Normal and Effective rates of Interest.
10. Explain about Varying Rates of Interest.
11. Explain about Repayment of loan by Uniform installments
12. Define Annuity? And Explain concepts of Annuity?
13. Explain Nominal and Effective rates of Discount
9. Explain about Census method and how do you apply census method to life office Data
16. Give the expressions for present values of assurance benefits in terms of Commutation functions.



	<b>Government College (Autonomous) Rajahmundry</b>	<b>Program &amp; Semester II B.Sc. (III Sem)</b>			
Course Code	<b>TITLE OF THE COURSE</b> <b>Basics of Financial Accounting</b>				
Teaching	Hours Allocated: 60 ( <b>Theory</b> )	L	T	P	C
Pre-requisites:	To have knowledge in Mathematics, Statistics and Accounts		6	0	3

### Course Objectives:

The Objective of this course is to

1. reveal the profits and losses of the business and provide a true and fair view of the business
2. Compliance with Statutory requirement
3. safeguard interest in various stakeholders
4. Helps in measurement of profit and loss in business

### Course Outcomes:

On Completion of the course, the students will be able to-

CO1	Have the conceptual knowledge of accounting
CO2	Demonstrate their knowledge by preparing the books like journals, ledgers
CO3	Record financial transactions and prepare reports using computers
CO4	Understand about the preparation of final accounts of an organization
CO5	Have the skill to prepare the ratio analysis
CO6	Prepare the revenue accounts and evaluate the balance sheet

### Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	
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**Syllabus:**

**UNIT – I (12 Hours)**

**Accounting Concepts-I:**

- a. Need for Accounting- definition, features, objectives, functions, systems and bases and scope of accounting - Book keeping and Accounting - Branches of Accounting - Advantages and limitations – basic terminology used - Accounting concepts and conventions.
- b. Accounting process - Accounting cycle - Accounting equation – classification of accounts – rules of double entry book keeping

**UNIT – II (12 Hours)****Accounting Concepts-II:**

- a. Identification of financial transaction – journalizing – posting to ledgers, balancing of ledger accounts – computerized accounting. Meaning and features - creating of an organization – types of vouchers.
- b. Sub division of journal-preparation of subsidiary books including different types of cashbooks – simple cash book, cashbook with cash and discount columns, cashbook with cash, discount and bank columns, cashbook with cash and bank columns and petty cash book.

**UNIT – III (12 Hours)****Final Accounts:**

Trial Balance meaning, objectives, methods of preparation – Final Accounts meaning, features, uses and preparation of manufacturing, trading account, Profit & Loss Account and balance sheet – adjusting and closing entries

**UNIT – IV (12 Hours)****Management Accounting Concepts:**

- a. Funds flow and cash flow statements uses and limitations–concept and construction of cash flow statement as per accounting standard 3
- b. Meaning of ratio analysis– classification of ratio analysis–computation and interrelation of different accounting ratios–liquidity, profitability, turnover ratios and solvency ratios

**UNIT – V (12 Hours)**

**Life Insurance Accounts:** Life insurance companies–preparation of revenue accounts profit and loss account, balance sheet and valuation of balance sheet.

### Textbooks:

1. Principles and Practice of Accounting R.L. Gupta & V.K. Gupta Sulthan Chand & sons
2. Accountancy – I, S.P. Jain & K.L Narang ,Kalyani Publishers

### Referencebooks:

1. Accountancy – I, Tulasian, TataMcgraw Hill Co
2. Financial Accounting – Dr.V.K.Goyal , Excel Books
3. Introduction to Accountancy, T.S.Grewal ,S.Chand and CO Accountancy – I, Haneef and Mukherjee, tataMcgraw Hill co
4. Advanced Accountancy – Arulanandam, Himalaya publishers
5. Advanced Accountancy-I, S.N.Maheshwari & V.L.Maheshwari, Vikash Publishing
6. Financial Accounting, Ashok Banarjee, Excel
7. Financial Accounting, Warren, Cengage

### WebLinks:

- <https://quickbooks.intuit.com/in/resources/accounting-taxes/financial-accounting/#:~:text=The%20main%20objectives%20of%20Financial,during%20a%20particular%20accounting%20perio>
- [http://cms.sinhgad.edu/SIM\\_Web\\_Assets/Samplenotesofaccounting-SIBAR.pdf](http://cms.sinhgad.edu/SIM_Web_Assets/Samplenotesofaccounting-SIBAR.pdf)
- [http://cms.sinhgad.edu/SIM\\_Web\\_Assets/Samplenotesofaccounting-SIBAR.pdf](http://cms.sinhgad.edu/SIM_Web_Assets/Samplenotesofaccounting-SIBAR.pdf)
- [https://en.wikipedia.org/wiki/Final\\_accounts](https://en.wikipedia.org/wiki/Final_accounts)
- <https://www.investopedia.com/ask/answers/062915/what-are-common-concepts-and-techniques-managerial-accounting.asp>
- <https://corporatefinanceinstitute.com/resources/knowledge/accounting/managerial-accounting/>

### 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	3	2	2	3	3	2	2	1	2	2	2
CO2	2	2	1	3	2	3	2	3	2	1	3	2	1
CO3	3	1	2	1	2	3	1	3	12	2	2	3	1
CO4	2	3	3	3	2	3	2	3	3	2	2	2	2
CO5	2	2	3	2	3	2	2	1	1	2	2	2	1

**GOVERNMENT COLLEGE (A) RAJAMAHENDRAVARAM**  
**MODEL PAPER FOR THE YEAR 2021-2022**  
**II B.Sc. (MSAS) PAPER-III**  
**SEMESTER-III**  
**BASICS OF FINANCIAL ACCOUNTENCY PAPER-III**

**Time: 2 ½ Hrs.**

**Max.marks:50**

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**SECTION-A**

**Answer Any THREE Questions**

**4X5=20 M**

1. What is the difference between book keeping and Accounting?
2. What are the importance and limitations of Accounting?
3. Explain various types of subsidiary books?
4. Write a simple Cash account for the following transactions>
  - a. Opening Dr. Balance: Rs. 10,000/-
  - b. Cash Received from Roshan Rs. 6,250/-
  - c. Cash Deposited into bank Rs. 1200/-
  - d. Rent paid Rs. 1500/-
  - e. Salaries paid Rs. 2,900/-
  - f. Cash Sales Rs. 15,000/-
  - g. Goods sold to Rohith Rs. 5,000/-
5. What is trail balance; advantages of trail balance, draw a perform for good trail balance?
6. Draw proform of various accounts that generally maintained in Insurance companies?

**SECTION-B**

**Answer Any THREE Questions**

**3X10=30 M**

7. What is the difference between Financial Accounting, Cost Accounting and Management Accounting
8. Explain clearly the concepts and conventions of accounting?
9. Write Journal Entries to the following transactions:
  - i. March: 1 Started Business with – 1,00,000
  - ii. Purchased good for Rs. – 25,000
  - iii. purchased Machinery and paid by bank – Rs. 40,000
  - iv. Purchased good from Chaitanya Rs. 17,000

- v. sale Rs. 1,52,000 and vi. Sales to Reddy Rs. 20,000
10. What are final accounts? Explain with examples how adjustments can be treated in final accounts?
11. Prepare final accounts from the following trail balance?

Debit	Amount	Credit	Amount
Buildings	10,000	Capital	17,000
Plant & Machinery	12,000	Creditors	12,500
Debtors	8,000	Bill payable	500
Purchases	15,000	Rent received	3,500
Repairs	2,000	Sales	25,000
Salary	9,000	Purchase returns	1,500
Insurance	500		
Sales returns	1200		
Wages	1800		
Postage & Stationery	500		
	50,000		50,000


Adjustments: Closing Stock: 5,000/- Outstanding Salary: 3,500/- ,  
Depreciate Plant and Machinery @ 10%

12. The following trail balance was extracted from the books of the new India Life Insurance Company? As on 31-3-2017

Particulars	Debit	Credit
Paid – up capital		
10,000 shares @ 10 each		2,00,000
Life fund balance as on 1-4-2016		29,72,300
Dividend paid	15,000	
Bonus in reduction of premium	31,500	
Premium less re-assurance premium (commission there on Rs. 5,000)		1,61,500
Claims paid	1,97,000	
Outstanding claims on 1-4-2016		7,000
Commission	9,300	
Management expenses	32,300	
Mortgages in India	4,92,200	
Interest, dividend and rent		1,12,700
Freehold premises	1,40,000	
Agents balance	9,300	
Investments	23,05,000	
Loans on policies	1,73,500	
Cash on deposits	27,000	
Cash on current account	7,300	
Surrenders	7,000	
Medical stores	7,000	
Consideration for annuities granted		10,000
Annuity	10,000	
	34,63,500	34,63,500

Prepare the revenue account for the year ended 31-3-2017 and a balance sheet of the company after considering the adjustments:

- (A) Claims outstanding Rs. 10,000/-  
 (B) Further Bonus in reduction of premium Rs. 5000/-  
 (C) Premium outstanding Rs. 5000/-  
 (D) Claims covered under re-insurance Rs. 80,000/-  
 (E) Management expenses due Rs. 30,000/

	<b>Government College (Autonomous) Rajahmundry</b>	<b>Program &amp; Semester II B.Sc. (IV Sem) PAPER-IV</b>			
Course Code  <b>SAS102</b>	<b>TITLE OF THE COURSE  Survival Models</b>				
Teaching	Hours Allocated: 60 ( <b>Theory</b> )	L	T	P	C
Pre-requisites:	To have knowledge in Mathematics and Statistics		6	0	3

### Course Objectives:

The Objective of this course is to

1. estimate and interpret survival and / or hazard functions from the survival data;
2. compare survival and / or hazard functions
3. assess the relationship of explanatory variables to survival time

### Course Outcomes:

On Completion of the course, the students will be able to-

CO1	Expose to the models
CO2	Compute various distribution functions
CO3	Work with censoring tools
CO4	Derive estimators effectively in various models
CO5	Arrive at rough estimates based on mortality tables

### Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	
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### Syllabus:

#### UNIT – I (12 Hours)

**Principles of modeling:** Need, benefits and limitations of models. Stochastic and deterministic models, discrete and continuous state spaces and time sets, suitability of model, short term and long term properties of a model, Analyzing the output of a model.

#### UNIT – II (12 Hours)

### **Concepts of Survival Models:**

The distribution and density functions of the random future lifetime, the survival function, the force of mortality or hazard rate and derive relationships between them, Laws of mortality like Gompertz and Makeham, the distribution and density functions of the curtate future lifetime random variable.

### **UNIT – III (12 Hours)**

#### **Estimating the future lifetime distribution :**

Truncation, Right censoring, Left or interval censoring, Likelihood construction for censored and truncated data, Kaplan-Meier model, Nelson Aalen model, Cox proportional hazard model, Breslow's approximations to the partial likelihood estimator.

### **UNIT – IV (12 Hours)**

#### **Binomial and Poisson Model:**

Maximum likelihood estimator of transitions intensities in Binomial and Poisson model and their mean-variances, advantages and disadvantages of multiple state models and the binomial models, including consistency, efficiency, simplicity of the actuarial estimators and their distributions, application to practical observations and generality.

### **UNIT – V (12 Hours)**

#### **Graduation:**

Initial and central exposed to risks, graduation, purpose and methods of graduation, testing goodness of fit and testing smoothness of a set of graduated estimates, statistical test for comparing a set of crude estimates and a standard table or a set of crude estimates and a set of graduated estimates, effect of duplicate policies on estimates.

#### **Textbooks:**

1. UK Institute of Actuaries core reading for subject CT4-Models.

#### **Referencebooks:**

1. Klein J.P. and Moeschberger, M.L.(2003) Survival Analysis: Techniques for Censored and Truncated Data 2nd Edition, Springer Verlag, New York,.
2. Klugman, S.A.(June 2003), "Estimation, Evaluation, and Selection of Actuarial Models".

3. Dick London (1997), Survival Models and their Estimation, second edition, ACTEX publications.
4. Cox, D.R. and Oakes, D.(1984) Analysis of Survival Data, Chapman and Hall, New York.

### WebLinks:

- <https://www.startertutorials.com/uml/principles-of-modeling.html>
- <https://learn.filtered.com/blog/the-principles-of-modelling>
- [https://en.wikipedia.org/wiki/Survival\\_analysis](https://en.wikipedia.org/wiki/Survival_analysis)
- [https://link.springer.com/chapter/10.1007%2F978-3-662-03460-6\\_2](https://link.springer.com/chapter/10.1007%2F978-3-662-03460-6_2)
- [https://hartman.byu.edu/docs/475Files/Stat475\\_Chapter2.pdf](https://hartman.byu.edu/docs/475Files/Stat475_Chapter2.pdf)
- [https://www.uvm.edu/~statdhtx/StatPages/More\\_Stuff/PoissonBinomial/PoissonBinom.html](https://www.uvm.edu/~statdhtx/StatPages/More_Stuff/PoissonBinomial/PoissonBinom.html)

[https://www.researchgate.net/publication/3923191\\_An\\_introduction\\_to\\_the\\_observation\\_of\\_graduation\\_as\\_survival\\_data](https://www.researchgate.net/publication/3923191_An_introduction_to_the_observation_of_graduation_as_survival_data)

### 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	3	2	2	1	3	2	2	1	2	2	2
CO2	1	2	1	2	2	2	2	2	2	1	3	2	1
CO3	3	1	2	2	2	2	1	2	1	2	2	3	1
CO4	2	3	1	2	1	2	2	2	2	2	2	2	2
CO5	2	2	2	2	3	2	2	1	1	2	2	2	1



**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) -2021-22**  
**II B.Sc. Statistics/Semester-IV- Actuarial Science**  
**Paper – IV-Survival Models**  
**(MODEL QUESTION PAPER)**

**Time: 2 1/2hrs**

**Max Marks: 50**

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**SECTION-A**

Answer any SIX questions from the following:

**6 x3 = 18M**


1. Explain the discrete and continuous state spaces and time sets.
2. Explain the distribution and density functions of the random future life time.
3. Describe a test for smoothness of a set of graduated estimates?
4. Write the advantages and disadvantages of multiple state models.
5. Explain the need for graduation.
6. Define Poisson distribution and its model
7. Explain about duplicate policies on estimates
8. Define complete and curate expectation of life. Derive the relation between them.
9. Explain methods of graduation

**SECTION-B**

Answer any THREE questions from the following:

**4x8= 32M**

10. Explain the Need, benefits and limitations of models
11. Explain short term and long term properties of a model, and analyzing the output Of a model
11. State Gompertz and Make ham laws of Mortality.
12. Explain Type one and two censoring, Likelihood construction for censored and truncated data, Kaplan-Meier model, Nelson Aalen model,
13. Write a brief note on censoring.
14. Derive the maximum likelihood estimator for the rate of mortality in the binomial model and its mean and variance. ?
15. Write statistical properties of maximum likelihood estimates and extending the models

	<b>Government College (Autonomous) Rajahmundry</b>	<b>Program &amp; Semester II B.Sc. (IV Sem) PAPER-V</b>			
Course Code  SAS103	<b>TITLE OF THE COURSE  Basics of Life Contingency</b>				
Teaching	Hours Allocated: 60 ( <b>Theory</b> )	L	T	P	C
Pre-requisites:	To have knowledge in Mathematics and Statistics and Insurances		6	0	3

### CourseObjectives:

The Objective of this course is to




1. gain knowledge about insurance and its features
- 2 study about life tables and its uses in estimating the survival rate or mortality rate
3. know about various types of insurances and their benefits

### CourseOutcomes:

On Completion of thecourse, the students will be able to-

CO1	Understand the basics of Insurance
CO2	Work on Mortality tables
CO3	Work on benefits of insurance on both death and survival
CO4	Calculate the commutation function
CO5	Calculate amount of Annuities and rates applicable

### Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	
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**Syllabus:**

## **UNIT-I**

### **Introduction to Life Insurance.**

**Meaning and definition of life insurance features, Types of life insurance, principles of life insurance, Terminology in insurance premiums.**

## **UNIT-II**

### **Survival Distributions**

**Survival Distribution-meaning, definitions, importance of Survival distributions  
Probability for the Age-at-Death, the survival function, time- until-death for a person aged  $x$ , curate-future-lifetime, force of mortality.**

## **UNIT-III**

### **Life Tables**

**Life tables, relation of life table functions to the survival function, life table example. The deterministic survivorship group, other life table functions, assumptions for Fractional ages, some analytical laws of mortality, some analytical laws of mortality, Select and ultimate tables.**

## **UNIT-IV**

### **Life Insurance**

**Insurances payable at the moment of death: level benefit insurance, endowment insurance, deferred insurance, varying benefit insurance.**

**Insurances payable at the end of year of death, relationships between Insurances payable at the moment of death and the end of year of death, recursion equation, Commutation functions.**

## **UNIT-V**

### **Life Annuities**

**Single payment contingent on survival, continuous life annuities, discrete life Annuities, life annuities with mthly payments, commutation function formulas for Annuities with level payments, varying annuities, recursion equations, complete Annuities.**

### **Textbooks:**

1. Actuarial Statistics by Deshmukh, S.R. Third edition Universities Press India.

### **Referencebooks:**

1. Bowers, N. L., Gerber, H.U., Hickman, J.C., Jones, D.A., Nesbitt, C.L.(1986),  
Actuarial Mathematics, The society of actuaries.
2. David, C. M., Dickson, Mary R. Hardy and Howard, R. waters.(2009). Actuarial  
Mathematics for Life Contingent Risks. Cambridge University Press.

## Web Links:

<https://www.startertutorials.com/uml/principles-of-modeling.html>  
<https://learn.filtered.com/blog/the-principles-of-modelling>  
[https://en.wikipedia.org/wiki/Survival\\_analysis](https://en.wikipedia.org/wiki/Survival_analysis)  
[https://link.springer.com/chapter/10.1007%2F978-3-662-03460-6\\_2](https://link.springer.com/chapter/10.1007%2F978-3-662-03460-6_2)  
[https://hartman.byu.edu/docs/475Files/Stat475\\_Chapter2.pdf](https://hartman.byu.edu/docs/475Files/Stat475_Chapter2.pdf)

## 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	3	2	2	3	3	2	2	1	2	2	2
CO2	2	2	1	3	2	3	2	3	2	1	3	2	1
CO3	3	1	2	1	2	3	1	3	12	2	2	3	1
CO4	2	3	3	3	2	3	2	3	3	2	2	2	2
CO5	2	2	3	2	3	2	2	1	1	2	2	2	1

**GOVERNMENT COLLEGE [A] RAJAHMAHENDRAVARM**  
**MODEL PAPER FOR THE YEAR 2021-2022**  
**II B.Sc. (MSAS) PAPER – V**  
**SEMESTER-IV**  
**BASICS OF LIFE CONTINGENCY**

**Time: 2 1/2 Hrs.**

**Max.marks:50**

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**SECTION-A**

**Answer Any FIVE Questions**

**5X4=20 M**


1. Explain the meaning of definition of Life Insurance
2. Explain the importance of Survival Distribution
3. Write a brief note on Force of Mortality.
4. Write short note on life tables
5. Explain deterministic survivorship group
6. Write a brief note on continuous Life Annuities.
7. Explain insurance payable at the moment of Death
8. Explain Recursion equation

**SECTION-B**

**Answer Any THREE Questions**

**3X10=30 M**

9. Explain about Principles of Life Insurance
10. Explain about types of Life insurance
11. Explain the time-until death for a person aged  $x$
12. Explain assumptions for fractional ages
13. Explain analytical levels of mortality
14. Explain briefly about (i) Level benefit insurance  
(ii) Endowment insurance

	<b>Government College (Autonomous) Rajahmundry</b>	<b>Program &amp; Semester II B.Sc. (IV Sem) PAPER-V</b>			
Course Code  SAS103	<b>TITLE OF THE COURSE  Basics of Life Contingency</b>				
Teaching	Hours Allocated: 60 ( <b>Theory</b> )	L	T	P	C
Pre-requisites:	To have knowledge in Mathematics and Statistics and Insurances		6	0	3

### Course Objectives:

The Objective of this course is to




1. gain knowledge about insurance and its features
- 2 study about life tables and its uses in estimating the survival rate or mortality rate
3. know about various types of insurances and their benefits

### Course Outcomes:

On Completion of the course, the students will be able to-

CO1	Understand the basics of Insurance
CO2	Work on Mortality tables
CO3	Work on benefits of insurance on both death and survival
CO4	Calculate the commutation function
CO5	Calculate amount of Annuities and rates applicable

### Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	
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**Syllabus:**

## **UNIT-I**

### **Introduction to Life Insurance.**

**Meaning and definition of life insurance features, Types of life insurance, principles of life insurance, Terminology in insurance premiums.**

## **UNIT-II**

### **Survival Distributions**

**Survival Distribution-meaning, definitions, importance of Survival distributions**

**Probability for the Age-at-Death, the survival function, time- until-death for a person**

**aged  $x$ , curate-future-lifetime, force of mortality.**

## **UNIT-III**

### **Life Tables**

**Life tables, relation of life table functions to the survival function, life table example. The deterministic survivorship group, other life table functions, assumptions for Fractional ages, some analytical laws of mortality, some analytical laws of mortality, Select and ultimate tables.**

## **UNIT-IV**

### **Life Insurance**

**Insurances payable at the moment of death: level benefit insurance, endowment insurance, deferred insurance, varying benefit insurance.**

**Insurances payable at the end of year of death, relationships between Insurances payable at the moment of death and the end of year of death, recursion equation, Commutation functions.**

## **UNIT-V**

### **Life Annuities**

**Single payment contingent on survival, continuous life annuities, discrete life Annuities, life annuities with mthly payments, commutation function formulas for Annuities with level payments, varying annuities, recursion equations, complete Annuities.**

### **Textbooks:**

1. Actuarial Statistics by Deshmukh, S.R. Third edition Universities Press India.

### **Referencebooks:**

1. Bowers, N. L., Gerber, H.U., Hickman, J.C., Jones, D.A., Nesbitt, C.L.(1986), Actuarial Mathematics, The society of actuaries.
2. David, C. M., Dickson, Mary R. Hardy and Howard, R. waters.(2009). Actuarial Mathematics for Life Contingent Risks. Cambridge University Press.

## Web Links:

<https://www.startertutorials.com/uml/principles-of-modeling.html>  
<https://learn.filtered.com/blog/the-principles-of-modelling>  
[https://en.wikipedia.org/wiki/Survival\\_analysis](https://en.wikipedia.org/wiki/Survival_analysis)  
[https://link.springer.com/chapter/10.1007%2F978-3-662-03460-6\\_2](https://link.springer.com/chapter/10.1007%2F978-3-662-03460-6_2)  
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## 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	3	2	3	2	2	3	3	2	2	1	2	2	2
CO2	2	2	1	3	2	3	2	3	2	1	3	2	1
CO3	3	1	2	1	2	3	1	3	12	2	2	3	1
CO4	2	3	3	3	2	3	2	3	3	2	2	2	2
CO5	2	2	3	2	3	2	2	1	1	2	2	2	1



**GOVERNMENT COLLEGE [A] RAJAHMAHENDRAVARM**  
**MODEL PAPER FOR THE YEAR 2021-2022**  
**III B.Sc. (MSAS) PAPER – V**  
**SEMESTER-V**  
**BASICS OF LIFE CONTINGENCY**

**Time: 2 1/2 Hrs.**

**Max.marks:50**

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**SECTION-A**

**Answer Any FIVE Questions**

**5X4=20 M**


1. Explain the meaning of definition of Life Insurance
2. Explain the importance of Survival Distribution
3. Write a brief note on Force of Mortality.
4. Write short note on life tables
5. Explain deterministic survivorship group
6. Write a brief note on continuous Life Annuities.
7. Explain insurance payable at the moment of Death
8. Explain Recursion equation

**SECTION-B**

**Answer Any THREE Questions**

**3X10=30 M**

9. Explain about Principles of Life Insurance
10. Explain about types of Life insurance
11. Explain the time-until death for a person aged x
12. Explain assumptions for fractional ages
13. Explain analytical levels of mortality
14. Explain briefly about (i) Level benefit insurance  
(ii) Endowment insurance

	<b>Government College (Autonomous) Rajahmundry</b>	<b>Program &amp; Semester III B.Sc. (V Sem) PAPER-VI</b>			
Course Code  SAS104	<b>TITLE OF THE COURSE  BUSINESS COMMUNICATION</b>				
Teaching	Hours Allocated: 60 ( <b>Theory</b> )	L	T	P	C
Pre-requisites:	To have knowledge in ENGLISH		6	0	3

### CourseObjectives:

The Objective of this course is to

1. gain knowledge about insurance and its features
- 2 study about life tables and its uses in estimating the survival rate or mortality rate

### CourseOutcomes:

On Completion of the course, the students will be able to-

CO1	Understand concept of communication
CO2	Types of communication
CO3	Use of communication
CO4	Non- verbal communication
CO5	Usage of Ict tools

### Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	
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**Syllabus:**

**UNIT-I**

**NATURE AND OF COMMUNICATION**

**Nature and scope of communication – Introduction- Functions of Communication- Role of a Manager-Communication-Role of a Manager Communication Basics Communication Networks Miscommunication-Barriers to Effective Communication.**

## UNIT-II

### EFFECTIVE INTERNAL COMMUNICATION

Tips for effective internal communication – Internal Communication (Beyond the organizational Hierarchy) - Effective in managerial communication --Strategies for improving organizational communication

## UNIT-III

### NON- VERBAL COMMUNICATION

INTRODUCTION –Forms of non-verbal communication-interpreting non – verbal messages – Tips for effective use of non –verbal communication-verbal communication.

## UNIT-IV

### ORAL COMMUNICATION

Cross cultural communication-elements of cultural – Principals of effective business writing – purpose of writing-writing style-role of communication-business correspondence principals of effective business writing.

## UNIT-V

### USING SOFTWARE APPLICATIONS-THE INTERNET

Microsoft Office-MS Word ,MS-Excel, MS-PowerPoint, MS-Access, MS-Outlook, Search Engines-The Business Applications of Internet

### Textbooks:

1. AnjaneesathReferil – Business communication

### Referencebooks:

1. Sankirtan Bodhi – Business communication
2. BharnaAdhikar – Business communication

### Web Links:

- <https://learn.filtered.com/blog/the-principles-of-modelling>  
[https://en.wikipedia.org/wiki/Survival\\_analysis](https://en.wikipedia.org/wiki/Survival_analysis)  
[https://link.springer.com/chapter/10.1007%2F978-3-662-03460-6\\_2](https://link.springer.com/chapter/10.1007%2F978-3-662-03460-6_2)  
[https://hartman.byu.edu/docs/475Files/Stat475\\_Chapter2.pdf](https://hartman.byu.edu/docs/475Files/Stat475_Chapter2.pdf)

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(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	3	2	2	3	3	2	2	1	2	2	2
CO2	2	2	1	3	2	3	2	3	2	1	3	2	1
CO3	3	1	2	1	2	3	1	3	12	2	2	3	1
CO4	2	3	3	3	2	3	2	3	3	2	2	2	2
CO5	2	2	3	2	3	2	2	1	1	2	2	2	1

**GOVERNMENT COLLEGE [A] RAJAHMAHENDRAVARM**  
**MODEL PAPER FOR THE YEAR 2021-2022**  
**III B.Sc. (MSAS) PAPER – VI**  
**SEMESTER-V**  
**BUSINESS COMMUNICATION**

**Time: 2 1/2 Hrs.**

**Max.marks:50**

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**SECTION-A**

**Answer Any FIVE Questions**

**5X4=20 M**

1. Explain Nature and Scope of Communication
2. Barrie's to Effective Communication.
3. Internal Communication.
4. Tips for Effective Internal Communication
5. Explain the following terms  
URL, WWW, WEB BROWSERS, HTML, HTTP, BPS, MODEM
6. Forms of Non-Verbal Communication.
7. Write short note on Search engines
8. Write short note on Internet

**SECTION-B**

**Answer Any THREE Questions**

**3X10=30 M**

10. Functions of Communication.
11. Role of Manager Communication.
12. Strategies for improving Organizational Communication.
13. Explain the Effectiveness in managerial Communication?
14. Explain any two applications of Microsoft office?
15. Tips for effective use of Non-verbal Communication?

**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) 2021-22**  
**III B.Sc. Statistics/Semester-VI Actuarial Science**  
**Paper-VII- MORTALITY AND OTHER ACTUARIAL SCIENCE (Elective-1)**

**Total hrs.Per week: 04**

**Total credits:03**

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**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 Heinemann: Chapters 1,10,11,12,15,22.
2. Special Note: Exposed to Risk using the Direct and Census methods including mortality rates by age and Multiple Decrements.
3. Special Note: Population Structures and Projections -2290 Edition
4. English Life Tables No. 14-2280/82 HMSC

**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) 2021-22**  
**III B.Sc. Statistics/Semester-VI Actuarial science**  
**Paper-VII- MORTALITY AND OTHER ACTUARIAL SCIENCE (Eletcive-1)**

**TIME: 2 1/2 Hrs**

**Max. Marks: 50**

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**SECTION-A**

**Answer any FIVE questions from the following**

**5X4=20M**

1. Write brief note on rates and ratio of mortality.
2. Write a brief note on multiple and discriminant roles.?
3. Write compression rates of selection?
4. Write population structures.
5. Define annuitants mortality?
6. Write short note on Indian assured lives?
7. Write graphic method of graduation
8. Write short note Graduation

**SECTION-B**

**Answer any THREE questions from the following**

**3x10=30M**

9. Write brief notes on exposed to risk aggregate rates
10. Write brief notes on life year and other rates of intervals
11. Write brief notes on multiple & discriminate tables
12. Write role on multiple & discriminate tables in actuarial statistics.
13. write graduation by reference to a standard table.
14. Write about population structures and projections.

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**CBCS SYLLABUS (Semester Wise) 2021-22**  
**III B.Sc. Statistics/Semester-VI Actuarial science**  
**Paper-VII - ACTUARIAL STATISTICS (Elective-II)**

**Total hrs.Per week: 04**

**Total credits:03**

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**Unit-I**

Warning's Result- Compound Distribution – Branching Process – Poissonian Process – Linear Population Process

**Unit-II**

Linear Combination of Random Variables – Chebyshev Inequality Central Limit Theorem – Special Distributions.

**Unit-III**

Descriptive Statistics – Inferential Statistics – Estimation of Method of Moments – Properties of Estimation.

**Unit-IV**

Confidence Intervals – Single Sample Problems – Two sample Problems – Paired problems.

**Unit-V**

Testing of Hypothesis – Single sample Problems – Two Sample problems – Chi square Tests - Bayesian Methods

References:

1. Gray, J.R: Probability ( Chapters 1,2,3,4,5, and 8)
2. Larson, H.J.: Introduction to Probability Theory and Statistical Inference. Published by Wiley.

**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) 2021-22**  
**III B.Sc. Statistics/Semester-VI Actuarial science**  
**Paper-VII- ACTUARIAL STATISTICS (Elective-II)**

**Max. Marks: 50**

**TIME: 2 1/2 Hrs**

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**SECTION-A**

**Answer any FIVE questions from the following** **5X4=20M**

1. Write brief note on linear population process.
2. State and prove Central Limit Theorem.
3. Write about inferential statistics?
4. Write the properties of a good estimator.
5. Write brief notes on double sample problem?
6. Write single sample problem for testing of hypotheses.
7. Write Short note ON Actuarial Statistics
8. Explain f-test for equality of two variances

**SECTION-B**

**Answer any THREE questions from the following** **3x10=30M**

9. Write properties of poisson process.
10. Write brief notes on branching process.
11. State and prove chebychev's inequality.
12. Write estimation of method of moments also write its properties.
13. Explain t-test for single mean and paired t-test.
14. Explain the procedure of chi-square test for goodness of fit



**NAME OF THE PROGRAMME: B.Sc. MSAS**

**SEMESTER: VI**

**TITLE OF THE PAPER: Advanced Business Communication**

**CODE OF THE PAPER: SAS105**

**COURSE OUTCOMES:**

- 1) Students would be able to learn about Communication levels
- 2) Students would be able to learn about Letter writing
- 3) Students would be able to learn about Memo writing
- 4) Students would be able to learn about Leadership qualities

**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) 2021-22**  
**III B.Sc. Statistics/Semester-VI Actuarial science**  
**Paper – VII-ADVANCED BUSINESS COMMUNICATION (Elective-III)**

**Total hrs.Per week: 04**

**Total credits:03**

**UNIT I**

Introduction: Meaning Definitions of Communications, Basics of Communication, Types of Communication ,Barriers of Communication and Essential of Effective Communication

**UNIT II**

Negotiation Skills , different types of Negotiations and styles Approaches to Negotiation, Barriers to Negotiation Group discussion- Team Building

**UNIT III**

Speeches and Presentations: Effective Speech, Preparation of Speech, Role of Body Language in Speech ,factors of Affecting Presentations-group Presentation-Training presentations-PPT –Writing Skills

**UNIT IV**

Business Letter writing :Definition and Functions of Business letters Enquiries and Replies –Order and Execution-Persuasive ,Sales and Collection Letters Parts ,Collection of Letters-Complaint Letters

**UNIT V**

MEMO writing –Report writing :Introduction-Memos-advantages and disadvantages of it, Report writing –Meaning-Steps

**SUGGESTED READING:**

1. Kothari, C.R. (2009): Research Methodology: Methods and Techniques, 2<sup>nd</sup> Revised Edition reprint, New Age International Publishers.
2. Kumar, R (2011): Research Methodology: A Step - by - Step Guide for Beginners, SAGE publications.

**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) -2021-22**  
**III B.Sc. Statistics/Semester-VI- Actuarial Science**  
**Paper –VII- ADVANCED BUSINESS COMMUNICATION (Elective-III)**  
**(MODEL QUESTION PAPER)**

**Time: 2 1/2hrs**

**Max Marks: 50**

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**SECTION-A**

Answer any **FIVE** questions from the following:

**5 x4 = 20M**

1. Explain Meaning and Definition of Communication
2. Explain Basics of Communication
3. Describe Barriers of Communication
4. Write the advantages and disadvantages of MEMOS
5. Explain the need of Report writing
6. Write Short note Team Building
7. Explain about writing Research in report
8. Discuss Group presentation

**SECTION-B**

Answer any **THREE** questions from the following:

**3x10 = 30M**

9. Explain types of communication
10. Explain Negotiation skills and types
11. Explain Group Discussion and its advantages
12. Explain role of body language in speech
13. Explain Training Presentation
14. Discuss Business Letter writing

**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) 2021-22**  
**III B.Sc. Statistics/Semester-VI Actuarial science**  
**LIFE CONTINGENCIES-I (Cluster-1,Paper-1)**  
**Paper-VIII-A1**

**Total hrs.Per week: 04**

**Total credits:03**

**UNIT-I**

**Net premiums or Benefit premiums**

The random future loss under an assurance or annuity contract, state the principle of equivalence, Notations and formulae of net premium for common life insurance contracts, Fully Discrete Premiums, True m-thly payment premium, Commutation functions, increasing and decreasing Benefit premiums, Profits contract, Types of bonus, Calculating net premiums for with-profit contracts.

**UNIT-II**

**Benefit Reserves**

Prospective and Retrospective Reserves , Net future random loss for reserves, Conditions for equality of prospective and retrospective Reserves, Fully Continuous Benefit Reserves, other formulas for fully Continuous Benefit Reserves, Fully Discrete Benefit Reserves, Benefit Reserves on a Semi-continuous basis, Benefit Reserves based on True m-thly Benefit premiums, Net Premium Reserves, Thiele's Differential Equation, Death strain at risk(DSAR), Expected death strain(EDS), Actual death strain (ADS), Mortality profit, Mortality profit on a portfolio of policies, Calculating net Reserves for with-profit contracts.

**UNIT-III**

**Analysis of Benefit Reserves**

Benefit Reserves for General Insurances, Recursion Relations for Fully Discrete Benefit Reserves, Benefit Reserves at Fractional Durations.

**UNIT-IV**

**Insurance Models Including Expenses**

List the type of expenses incurred in writing a life insurance contract, Describe the influence of inflation on the expenses, Define the gross future loss random variable for the benefits and annuities using equivalence principle.

**UNIT-V**

**Multiple Life Functions**

Joint distribution of Future Lifetimes, The Joint-Life Status, The Last-Survivor Status, More Probabilities and Expectations, Dependent Lifetime Models: Common Shock, Insurance and Annuity Benefits: Survival Status, Special Two-Life Annuities, Reversionary Annuities, Simple Contingent Functions.

**Text Books**

1. Bowers, N. L., Gerber, H.U., Hickman, J.C., Jones, D.A., Nesbitt, C.L.(2286),  
Actuarial Mathematics, The society of actuaries.

**References**

1. UK Institute of Actuaries core reading for subject CT5-Contingences.
2. Robin Cunningham, Thomas N. Herzog, Richard L. Models for Quantifying Risk, 4th Edition, ACTEX Publications, 2011

**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) -2021-22**  
**III B.Sc. Statistics/Semester-VI- Actuarial Science**  
**LIFE CONTINGENCIES-I (Cluster-1,Paper-1)**  
**Paper-VIII—A1**  
**(MODEL QUESTION PAPER)**

**Time: 2 1/2hrs**

**Max Marks: 50**

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**SECTION-A**

**Answer any FIVE questions**

**5X4=20 M**

1. State the principle of equivalence ?
2. Explain the notations and formulae of net premium for common life insurance contracts ?
3. Explain Fully Continuous Benefit Reserves?
4. Explain Recursion Relations for Fully Discrete Benefit Reserves?
5. Describe the influence of inflation on the expenses?
6. Describe Joint distribution of Future Lifetimes?
7. Write short note on Insurance Models
8. Write Short note on benefit Reserves ?

**SECTION-B**

**Answer any THREE questions from the followin**

**3X10=30M**

9. Write a brief note on discrete premiums.?
10. For Insurance contract and assumptions of an aggregate mortality law
  - (i) Exhibit the formulas for the d.f and p.d.f of conditional distribution for  $t^L$ , given  $T(x)>t$
  - (ii) Display graphs of these conditional p.d.f's for  $t=0,20,40,50$
11. Define the gross future loss random variable for benefits.?
12. Write short note on joint distribution of future life time?
13. Write notes on true m-thly premiums.?
14. Write a short note on benefit reserves for General Insurance?

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**III B.Sc. Statistics/Semester-VI Actuarial science**  
**LIFE CONTINGENCIES-II (Cluster-1,Paper-2)**  
**Paper-IX-A2**

**Total hrs.Per week: 04**

**Total credits:03**

**Unit:1**

**Multiple Decrement Model**

Two random variables, Random Survivorship Group, Deterministic Survivorship Group, Associated single Decrement tables: Basic Relationship, Uniform Distribution Assumption for multiple decrements, Construction of Multiple decrement table, Relationship between single and multiple decrement tables.

**Unit:2**

**Application of multiple decrement theory**

Actuarial present value and their numerical evaluation, benefit premium and reserves, competing risks, multiple state modelling, multiple state Markov model, Kolmogorov forward equations, multiple decrement tables.

**Unit:3**

**Profit testing**

Discounted emerging costs, unit-linked contract, Profit test annual premium contracts, the profit vector, the profit signature, the net present value and the profit margin, determining premiums using profit test,

**Unit:4**

Profit criterion, determining reserves using profit testing, Zeroising negative cashflows, Equity-linked insurance, deterministic profit testing for equity linked insurance, Stochastic profit testing, Stochastic pricing, Stochastic reserving.

**Unit:5**

**Pension funds**

Multiple decrement service table for pensions calculations, updating a service table, the salary scale function, setting the DC contribution, the service table, funding plans, valuation of benefits: Final salary plans, Career average earnings plans.

**Text Books**

1. Bowers, N. L., Gerber, H.U., Hickman, J.C., Jones, D.A., Nesbitt, C.L.(2286), Actuarial Mathematics, The society of actuaries.

**References**

1. UK Institute of Actuaries core reading for subject CT5-Contingencies.
2. Robin Cunningham, Thomas N. Herzog, Richard L. Models for Quantifying Risk, 4th Edition, ACTEX Publications.

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**CBCS SYLLABUS (Semester Wise) -2021-22**  
**III B.Sc. Statistics/Semester-VI- Actuarial Science**  
**LIFE CONTINGENCIES-II (Cluster-1,Paper-2)**  
**Paper-IX-A2**  
**(MODEL QUESTION PAPER)**

**Time: 2 1/2hrs**

**Max Marks: 50**

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**SECTION-A**

**Answer any FIVE questions from the following:**

**5 x4 = 20M**

1. Write a short note on random survivorship group.?
2. Write a short note on multiple state model.?
3. Write a short note on multiple state markov model.?
4. Describe the types of benefit provided by unit-linked contract.?
5. Define net present value and profit margin.?
6. Explain funding plans.?
7. Explain multiple decrement models.?
8. Define profit test annual premium

**SECTION-B**

**Answer any THREE questions from the following**

**3X10=30M**

9. Explain uniform distribution assumption for multiple decrements.?
10. Explain actuarial present value and their numerical evaluation .?
11. Write a short note on unit linked contract or assurance?
12. Explain the fully continuous and fully discrete premiums?
13. Explain stochastic profit testing?
14. Explain the premium determining using profit test?

**NAME OF THE PROGRAMME: B.Sc. MSAS**

**SEMESTER: VI**

**TITLE OF THE PAPER: Principles of Insurance**

**CODE OF THE PAPER: SAS109**

**COURSE OUTCOMES:**

- 1) Students would be able to learn about Risk Management**
- 2) Students would be able to learn about Insurance Market**
- 3) Students would be able to learn about Insurance Customers**
- 4) Students would be able to learn about Insurance Terminology**



**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) 2021-22**  
**III B.Sc. Statistics/Semester-VI Actuarial science**  
**PRINCIPLES OF INSURANCE (Cluster-2, Paper-1)**  
**Paper-VIII-B1**

**Total hrs.Per week: 04**

**Total credits:03**

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**Unit-I**

Risk Management: Meaning of risk and distinguish between different types of risks, Risk analysis and risk management techniques, Concept of risk retention for individuals.

**Unit-II**

Insurance Market: Indian insurance market, role of intermediaries: agents, brokers; role of specialists: surveyors, medical examiners, third party administrators(TPA); role of regulator and other bodies.

**Unit-III**

Insurance Customers: Concept of Insured customer, different types of customers, concept of customer mindset and customer satisfaction, importance of ethical behavior.

**Unit-IV**

Insurance Contract: Notion of insurance contract, significance of principle of insurable interest, principles of indemnity, principles of subrogation and contribution, principles of utmost good faith, concept of proximate cause.

**Unit-V**

Insurance Terminology: Concept of life and non-life insurance, terms specific to life insurance, terms specific to non-life insurance.

**Text Books**

1. Bowers, N. L., Gerber, H.U., Hickman, J.C., Jones, D.A., Nesbitt, C.L.(2286),  
Actuarial Mathematics, The society of actuaries.

**References:**

1. Principles of Insurance, IC-01, Insurance institute of India.
2. Principles of Insurance and Banking, Dr. S.S. Kundu, Dr. B.S. Bodla

**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) -2021-22**  
**III B.Sc. Statistics/Semester-VI- Actuarial Science**  
**PRINCIPLES OF INSURANCE (Cluster-2,Paper-1)-Paper-B1**  
**(MODEL QUESTION PAPER)**

**Time: 3hrs**

**Max Marks: 50**

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**SECTION-A**

**Answer any FIVE questions from the following**

**5X4=20M**

1. Write Distinguish between different types of risks?
2. Explain the role of intermediaries?
3. Explain the different types of customers ?
4. Explain of significances of principal of Insurance interest?
5. Explain the concept of risk of retention for individuals?
6. Explain the concept of customer satisfaction?
7. Explain the role of specialists?
8. Explain the concept of Risk Management

**SECTION-B**

**Answer any THREE questions from the following**

**3X10=30M**

9. Explain the risk analysis and risk management techniques?
10. Explain the importance of ethical behavior?
11. Explain the role of third party administrators?
12. Explain the principals of subrogation and contribution?
13. Explain the principals of utmost good faith and proximate cost?
14. Explain terms specific to life insurance and specific to non-life insurance?

**NAME OF THE PROGRAMME: B.Sc. MSAS**

**SEMESTER: VI**

**TITLE OF THE PAPER: Practice of Insurance**

**CODE OF THE PAPER: SAS110**

**COURSE OUTCOMES:**

- 1) **Students would be able to learn about** Practice of Life Insurance
- 2) **Students would be able to learn about** Premiums and bonuses
- 3) **Students would be able to learn about** Plans of Life Insurance
- 4) **Students would be able to learn about** Group Insurance

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**CBCS SYLLABUS (Semester Wise) 2021-22**  
**III B.Sc. Statistics/Semester-VI Actuarial science**  
**PRACTICE OF INSURANCE (Cluster-2,Paper-2)**  
**Paper-IX-B2**

**Total hrs.Per week: 04**

**Total credits:03**

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**Unit-I**

Practice of Life Insurance: Introduction, Over view of Indian insurance market, growth of insurance business in india, liberalization of Indian insurance sector, organizational structure of LIC.

**Unit-II**

Premiums and bonuses: Concept of premium, different types of premiums, factors involved in the calculation of premium, concept of bonus.

**Unit-III**

Plans of Life Insurance: various life insurance plans, importance of ULIPs, importance of riders, industrial life insurance, benefits of MWP, importance of key-man insurance, importance of health insurance.

**Unit-IV**

Annuities: Concept of annuity, analysis of different types of annuity plans, advantages and disadvantages of annuity.

**Unit-V**

Group Insurance: Importance of group insurance, different group insurance schemes, group insurance classifications, features of group insurance schemes, group superannuation schemes, group leave encashment scheme, group insurance scheme in view of EDLI, social security scheme.

**Text Books**

1. Bowers, N. L., Gerber, H.U., Hickman, J.C., Jones, D.A., Nesbitt, C.L.(2286),  
Actuarial Mathematics, The society of actuaries.

**Reference:**

1. Practice of Life Insurance IC-02, Insurance institute of india.
2. Theory and Practice of Insurance, [J. François Outreville](#).

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**CBCS SYLLABUS (Semester Wise) -2021-22**  
**III B.Sc. Statistics/Semester-VI- Actuarial Science**  
**PRACTICE OF INSURANCE(Cluster-2,Paper-2) Paper –IX-B2**  
**(MODEL QUESTION PAPER)**

**Time: 2 1/2hrs**

**Max Marks: 50**

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**SECTION-A**

**Answer any FIVE questions from the following**  
**5X4=20M**

1. Explain the growth of insurance business in India?
2. Explain organizational structure of LIC
3. Write the different types of premiums
4. Write the various life insurance plans
5. Write the benefits of MWP
6. Write the advantages and disadvantages of annuity
7. Write the group insurance classification
8. Write short note on Annuities

**SECTION-B**

**Answer any THREE questions from the following** **3X10=30M**

9. Explain briefly about Indian insurance market?
10. Write factors involved in the calculation of premiums and the concept of bonus
11. Write the importance of key-man insurance and health insurance
12. Explain the concept of premiums and write different types of premiums with explanation
13. Write the analysis of different types of annuity plans
14. Write the importance of riders and industrial life insurances

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**CBCS SYLLABUS (Semester Wise) 2021-22**  
**III B.Sc. Statistics/Semester-VI Actuarial science**  
**STATISTICAL TECHNIQUES FOR RESEARCH METHODS**  
**(Cluster-3,Paper-1)**  
**Paper-VIII-C1**

**Total hrs.Per week: 04**

**Total credits:03**

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**UNIT I**

Introduction: Meaning, objection and motivation in research, types of research, research approach, significance of research. Research problems: definition, selection and necessity of research problems.

**UNIT II**

Survey Methodology and Data Collection, inference and error in surveys, the target populations, sampling frames and coverage error, methods of data collection, non-response, questions and answers in surveys.

**UNIT III**

Processing, Data Analysis and Interpretation: Review of various techniques for data analysis covered in core statistics papers, techniques of interpretation, precaution in interpretation.

**UNIT IV**

Develop a questionnaire, collect survey data pertaining to a research problem (such as gender discriminations in private v/s government sector, unemployment rates, removal of subsidy, impact on service class v/s unorganized sectors), interpret the results and draw inferences.

**UNIT V**

Interpretation and Report Writing-Meaning, Techniques of interpretation, Significance of Report Writing –Different steps in Writing Report ,Types of Reports ,Oral Presentation, Precautions for Writing Research Reports and Conclusio

**Text Books**

1.Bowers, N. L., Gerber, H.U., Hickman, J.C., Jones, D.A., Nesbitt, C.L.(2286),  
Actuarial Mathematics, The society of actuaries.

**SUGGESTED READING:**

1. Kothari, C.R. (2009): Research Methodology: Methods and Techniques, 2<sup>nd</sup> Revised Edition reprint, New Age International Publishers.
2. Kumar, R (2011): Research Methodology: A Step - by - Step Guide for Beginners, SAGE publications.

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**CBCS SYLLABUS (Semester Wise) -2021-22**  
**III B.Sc. Statistics/Semester-VI- Actuarial Science**  
**STATISTICAL TECHNIQUES FOR RESEARCH METHODS**  
**(Cluster-3,Paper-1)**  
**Paper-VIII-C1**  
**(MODEL QUESTION PAPER)**

**Time: 2 1/2hrs**

**Max Marks: 50**

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**SECTION-A**

**Answer any FIVE questions from the following:**

**5 x4 = 20M**

- 1. Explain Meaning and objection of Research**
- 2. Explain origin of Research**
- 3. Describe Survey and its Importance**
- 4. Write the advantages and disadvantages of Questionnaire**
- 5. Explain the need of Report writing**
- 6. Write short note on Data Analysis**
- 7. Explain about writing Research in report**
- 8. Discuss about interpretation**

**SECTION-B**

**Answer any THREE questions from the following:**

**3x10 = 30M**

- 9. Explain the Need of research and it types**
- 10. Explain Research problems**
- 11. Explain Data Collection.**
- 12. Explain principles steps in survey**
- 13. Explain type of reports**
- 14. Discuss about Research Problems**

**Government College [A] Rajamahendravaram**  
**CBCS SYLLABUS (Semester Wise) 2021-22**  
**III B.Sc. Statistics/Semester-VI Actuarial science**  
**SURVIVAL ANALYSIS AND BIO STATISTICS (Cluster-3,Paper-2)**  
**Paper-IX-C2**

**Total hrs.Per week: 04**

**Total credits:03**

**UNIT I**

Introduction: Meaning, of survival analysis ,Survival distributions and their applications- Exponential, Gamma, weibull, Lognormal and their density functions

**UNIT II**

Censoring Schemes: type -1 ,types II and Progressive or random censoring with biological examples Estimation mean survival time and variance of the Type -1 and types II Censored data

**UNIT III**

Competing Risk Theory : Indices for measurement of Probability of death under competition risks and their inter-relations. Estimation of probabilities of death using maximum likelihood principle and modified minimum chi-square methods

**UNIT IV**

Stochastic epidemic Models : Simple epidemic models, general epidemic model definition and concept duration of an epidemic

**UNIT V**

Statistical Genetics: Introduction, Concept –Genotype,Phenotype,Dominance Excessiveness ,linkage and recombination ,coupling and repulsion ,Random mating,Gametic array.Distribution of Genotypes under random mating, Clinical trails planning and design of clinical trails ,Phase I,II and III trails .Single Blinding

**Text Books**

1.Bowers, N. L., Gerber, H.U., Hickman, J.C., Jones, D.A., Nesbitt, C.L.(2286),  
Actuarial Mathematics, The society of actuaries.

**SUGGESTED READING;**

1. Lee E.T and wang J.w(2003) Statistical methods for Survival data Analysis
2. Biswas Applied stochastics Process
3. Medical biostatisticsby Indrayn A (2008)



**Government College [A] Rajamahendravaram**  
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**III B.Sc. Statistics/Semester-VI- Actuarial Science**  
**SURVIVAL ANALYSIS AND BIO STATISTICS (Cluster-3,Paper-2)**  
**Paper-IX-C2**  
**(MODEL QUESTION PAPER)**

**Time: 2 1/2hrs**

**Max Marks: 50**

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**SECTION-A**

Answer any **FIVE** questions from the following:

**5 x4 = 20M**

1. Explain Meaning and objectives of Survival analysis
2. Explain origin of Bio-statistics
3. Describe Survival Distribution and its applications
4. What are type-1 and types-II errors
5. Explain Competing risk theory
6. Write stochastic epidemic models
7. Explain Phase I,II and III trails
8. Discuss about General Models

**SECTION-B**

Answer any **THREE** questions from the following:

**3x10 = 30M**

9. Explain Exponential and gamma Distribution
10. Explain weibull, Lognormal and their density functions
11. Explain Progressive or random censoring with biological examples
12. Explain Estimation of probabilities of death using maximum likelihood principle and modified minimum chi-square methods
13. Explain Simple epidemic models, general epidemic model definition and concept duration of an epidemic
14. Discuss Genotype,Phenotype,DominanceExcessiveness ,linkage and recombination

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**CBCS SYLLABUS (Semester Wise) -2021-22**  
**III B.Sc. Acturial Science /Semester-VI**

**PROJECT WORK**

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**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. The assessment will be based on the project report, presentation and viva-voce **ONLY INTERNAL EVALUATION.**
4. A project may be undertaken by a group of students and the maximum number of students in a team shall not exceed five.
5. A project work shall be supervised by a faculty member assigned by the Head of the Department.
6. There shall be an internal examiner for the evaluation of the project work.
7. A project work should encourage a student to interact with the end user.
8. A project work should be chosen such that there is enough scope to apply and demonstrate the statistical techniques learnt in the course.
9. 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.
10. 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.