

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



DEPARTMENT OF ACTUARIAL SCIENCE

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

**SYLLABUS & MODEL PAPERS
2022-2023**

GOVERNMENT COLLEGE (A) RAJAMAHENDRAVARAM

DEPARTMENT OF STATISTICS

Committee Constituted for Board of Studies Meeting for the year 2022-2023

Sl. No.	Name	Member
1	Sri.G.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 SRR & CVR College(A), Vijayawada	Subject Expert
5	Dr D.V.Nagaeswara Rao Head, Dept. of Economics Govt. College(A) Rajamahendravaram	Member
6.	Sri.P.V.V.Satya Narayana Head, Dept. of Commerce Govt. College(A) Rajamahendravaram	Member
7.	Mr. J. Naga Sriram Guest faculty in Statistics Govt college(A) Rajamahendravaram	Member
8.	Mr. Ch. Naresh Guest faculty in Statistics Govt College(A) Rajamahendravaram	Member
19	Ms K.Suneetha Guest faculty in Statistics Govt College(A) Rajamahendravaram	Member
10	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	SRR & CVR College(A), Vijayawada	9848505506	sairamy285@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.GOV.T.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@gmail.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 2022-2023

An online meeting was conducted for Board of Studies on 26-07-2022 from 12.00 to 01.00 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	Sri.G.Moses Head, Dept of StatisticsDNR 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 SRR & CVR College(A), Vijayawada	Subject Expert	
5	Sri.P.V.V.Satya Narayana Head, Dept. of Commerce Govt. College(A) Rajamahendravaram	Member	
6.	Dr D.V.Nagaeswara Rao Head, Dept. of Economics Govt. College(A) Rajamahendravaram	Member	
5.	Mr.J.NagaSriram Guest faculty in Statistics Govt college(A),Rajamahendravaram	Member	
6.	Mr. Ch. Naresh Guest faculty in Statistics Govt College(A),Rajamahendravaram	Member	
7.	Ms.K.Suneetha Guest faculty in Statistics Govt College(A),Rajamahendravaram	Member	
8.	Student Members (i) Sk.Hafeez (ii) K.Pavan Lokesh (iii) N.Swarna Latha (iv) K.Lavanya		

**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

DEPARTMENT OF ACTUARIAL SCIENCE

Minutes & Resolutions of BOS dated 26-07-2022

A meeting was conducted for Board of Studies on 26-07-2022 from 10.00 to 12.00 am for all the semesters for the UG programmes B.Sc under the chairmanship of Dr N.Madhavi (Lecturer-in-charge, Dept of Statistics) with the committee members through offline mode

Agenda Point 1: Program wise Curriculum design for all the semesters

Discussion : A discussion was being held among the members regarding the curriculum design for all the semesters for the programme B.Sc Actuarial Science. The curriculum design was changed from this year 2022-2023 especially for fifth semester and sixth semester apart from all the four semesters. The syllabus for the first four semesters were discussed and decided to continue the same syllabus given as earlier with some added additional inputs into the syllabus. Basing on the syllabus prescribed by APSCHE and following CBCS pattern, it is decided to frame the syllabus with new papers and titles for fifth semester. Electives are being prepared for and the students can choose any one elective from the given electives which consists of two papers in each elective. Also the discussion was held regarding the community service project and internships/ Apprenticeships in second and fourth and sixth semesters.

Resolution 1: It is resolved to adopt the prescribed syllabus shown for the four semesters for all courses and it is resolved to design the curriculum in such a way that the students must select one elective out of three elective sfor B.sc Actuarial Science efor fifth semester s and accordingly Curricular and Co-Curricular activities were to be followed

Resolution 2: It is resolved to send the students for Community service project at the end of second semester and mentors were allotted for the batch of students and the project is to be completed within 8 weeks and 100 marks were allotted for this project. Any student who have not undergone the CSP project will be failed.

Resolution 3 :It is resolved to send the students of fourth semester for internship/Apprenticeship for about two months and four months internship/ Apprenticeship after fifth semester

Resolution 4: It is also resolved to send the students for internship in fifth semester and some studnts in sixth semester basing on the guidelines give by college. The syllabus given for fifth semester will be followed accordingly.

Agenda Point 2: Designing of Course Outcomes and Course Objectives:

Discussion: The members thoroughly verified the prepared programme outcomes, course outcomes and course objectives for al the programmes and courses and satisfied.

Resolution 1: It is resolved to incorporate the programme outcomes, course outcomes and course objectives for all the programmes and courses in an efficient manner.

Resolution 2: It is resolved to incorporate CO PO mapping for all the programmes and courses and to be given in the syllabus

Agenda Point 3: Identification of unitwise assignment questions and relevant model question paper

Discussion: The members pointed out some important questions for assignment purpose keeping in view of examinations and compulsory questions and model question papers were verified

Resolution 1 : It is resolved to give assignment questions as suggested by the members

Resolution 2: It is resolved to prepare relevant model question papers for the syllabus framed.

Agenda Point 4: Identifying inclusion of components of Skill Development, Employability and Entrepreneurship in the course content and specific activity proposed

Discussion: Sri K. Ashok (Member of BOS) pointed out the components of skill development, Employability and Entrepreneurship in the course content and accordingly activities like, guest lectures, internships, project works, field works etc are to be prepared

Resolution 1: Basing on the discussion held, it is resolved to identify skill, employability and Entrepreneurship components by specifying with red, green and Yellow colours .

Resolution 2 : It is resolved to specify the activity proposed for skill development, Employability and Entrepreneurship in the course content and to be shown in the syllabus

Agenda Point 5: Additional inputs into the curriculum:

Discussion: Sri K. Ashok (Subject Expert) of SRR and CVR college, Vijayawada discussed about the additional inputs into the curriculum wherever necessary to give clear understanding about the topic and these are not included for exam.

Resolution 1: It is resolved to incorporate additional inputs into the curriculum.

Agenda Point 6: Designing Model question Papers and identifying potential paper Setters

Discussion: The members saw the designed model question papers for all the courses and identified the paper setters from various colleges.

Resolution 1: It is resolved to prepare model question papers for programmes B.Scc Actuarial Science and the model for all the courses is same

Resolution 2: It is resolved to identify efficient paper setters from various colleges and the list of the paper setters is given in the syllabus.

Agenda Point 7: Innovative Teaching—Learning Methodology (Learner Centric)

Discussion:The various methods of Teaching Learning were discussed by all the members. ICT teaching methodology and Blended mode teaching is given more importance by all the members. Online teaching methodology is also preferred and essential way of teaching learning in the present scenario. Google classroom methodology is also preferred in making the students online tests.

Resolution 1:It is resolved by all members to follow latest methodologies and easy way of Teaching Learning in maintaining the students Standards.

Resolution 2:It is resolved to follow blended mode of teaching besides the lecture method, ICT based method etc.

Agenda Point 8: Academic activities of the Department such as Seminars, fieldworks etc.

Discussion: The department conducts National Statistics day, World population day every year and conducts guest lectures, competitions like elocution, Essay writing, quiz etc . Apart from this the department conducts seminars, webinars, extension lectures, fieldworks etc. Chart Exhibition is also celebrated and outside school students were invited to see the chart exhibition.

Resolution 1: It is resolved to conduct department activities, seminars, webinars, guest lectures, field works etc for the students

Resolution 2:It is resolved to conduct chart exhibition to increase the knowledge among the students by way of showing the information in the form of charts.

Agenda Point 9: Assessment Component:

The assessment component is designed as follows:

For I ,II and III year students theory examinations: 100 Marks
External Exam: 50Marks
Internal Exam: 50Marks

The internal exam is based on

30 marks for internal exams (20 for internal tests and 10 for oline exam)

5 marks for assignment

5 marks for viva

5 marks for seminars

5 marks for attendance

Community service project is undertaken by second semester students for 100 marks

The 100 marks were allotted as follows

- | | | |
|------------------------------|-------|-----------|
| (i) Project Log Book | ----- | -20 Marks |
| (ii) Project Implementation | ----- | -30 Marks |
| (iii) Project Report Writing | ----- | -25 Marks |
| (iv) Project Viva | ----- | -25 Marks |

Agenda Point 9: Any other proposal with the permission of the chair

Discussion: A Certificate course is being handled by the department at the end of fourth semester and the title is Statistical tools for Research Methodology

Resolution 1: It is resolved to run the certificate course this year also

Resolution 2:It is resolved to conduct an exam in the certificate course for 50 marks.

Signatures of the members Present

- 1.
- 2.
- 3.
- 4.
- 5.


Chairman
Board of Studies

B.Sc. (ACTUARIAL SCIENCE)

B.SC ACTUARIAL SCIENCE SYLLABUS 2022-23							
FIRST YEAR							
Semester	Paper	Subject	Hrs.	Credits	IA	ES	Total

S.NO	SEMESTER	TITLE OF THE PAPER	COURSE CODE
3	III	BASICS OF FINANCIAL ACCOUNTANCY	
4	IV	Paper-IV --Survival Models	SAS102
5	IV	Paper-V - BASICS OF LIFE CONTINGENCY	SAS103
6	V	A-Paper-VI - :Life Contingencies-1	SAS104
7	V	A-Paper-VII - Life Contingencies-2	SAS105
8	IV	B-Paper-VI - Principles of Insurance	SAS106
9	VI	B-Paper-VII - Practice of Insurance	SAS107
10	VI	C-Paper-VI –Survival analysis and Bio Statistics	SAS108
11	VI	C-Paper-VII - Actuarial Applications	SAS109

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-VI	A1- Life Contingencies-1	6	5	50	50	100
	Paper-VII	A2- Life Contingencies-2	6	5	50	50	100
	Paper-VI	B1- Principles of Insurance	6	5	50	50	100
	Paper-VII	B2- Practice of Insurance	6	5	50	50	100
	Paper-VI	C1- Survival analysis and Bio Statistics	6	5	50	50	100
	Paper-VII	C2- Actuarial Applications	6	5	50	50	100

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

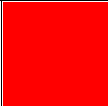
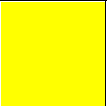

Course Objectives:

- 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:

Objectives:

To make the students acquire the conceptual knowledge of accounting

To equip the students with the knowledge of accounting process and preparation of final accounts

Unit-I: Introduction to Accounting

Need for Accounting – Definition – Objectives, Advantages – Bookkeeping and accounting – Accounting concepts and conventions – Accounting Cycle – Classification of Accounts and its rules – Double Entry Book-keeping – Journalization – Posting to Ledgers, Balancing of ledger Accounts (problems).

Unit-II: Subsidiary Books and Trail Balance

Types of Subsidiary Books – Cash Book, Three-column Cash Book (Problems).
Preparation of Trail balance

Unit-III: Bank Reconciliation Statement

Need for bank reconciliation –
Reasons for difference between Cash Book and Pass Book Balances –
Preparation of Bank Reconciliation Statement –
Problems on both favourable and unfavourable balances.

Unit-IV: Final Accounts

Preparation of Final Accounts: Trading account – Profit and Loss account – Balance Sheet –
Final Accounts with adjustments (Problems).

UNIT-V: Depreciation and Consignment Accounts

Meaning of Depreciation – Methods of depreciation: Straight line –
Writtendown value and Annuity (Simple Problems).

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

Reference books:

1. Accountancy – I, Tulasian, Tata Mcgraw 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, tata Mcgraw 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

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 (AUTONOMOUS)
RAJAMAHENDRAVARAM
(Re-Accredited by NAAC with "A+" Grade)
IIB.SC (MSAs) MODEL PAPER
(For Admitted Batch 2020-21)
COM246: BASICS OF FINANCIAL ACCOUNTING

Time: 2 1/2 Hrs.

Max Marks: 50

PART-A

Answer any **FIVE** Questions. All questions carry equal Marks. **5X3=15M**

1. Describe about various types of accounts.

2. Journalise the following transactions

2016		
July, 1	Prasad commenced business with a capital of	74,000
July, 8	purchased goods from Murali	25,000
July, 10	purchased goods for cash	15,000
July, 28	Stock used for personal purpose	1,000

3. Enter the following transactions in the sales book Sri Hari

2016		
Jan, 2	Sold goods to Ramakrishna	2,000
Jan, 3	Sale to Sanjeev	3,000
Jan, 4	Sold goods on cash to Sriram	1,500
Jan, 5	Sale to Varma with trade discount of 10%	1,000

4. Prepare Trial Balances from the following particulars

Outstanding Expenses	1,500	Cash	6,000
Purchase returns	3,000	Loan	4,500
Purchases	42,000	Machinery	3,000
Capital	30,000	Sales	16,000
Office expenses	9,000	Reserve fund	2,000
Creditors	3,000		

5. What are the differences between Capital and Revenue expenditure?

6. What are the causes for difference between cash book and pass book?

7. Annuity method of depreciation

8. Explain the significance of diminishing balance method.

PART-B

Answer **ALL** the Questions. All questions carry equal Marks **5X7=35M**

9. Discuss briefly the various Accounting Principles.

(OR)

10. Journalise the following transactions

2016	
July, 1	Prasad commenced business with a capital of 74,000

July,2	openabankaccountwithRs.10,000/-	
July,4	Goods purchased	15,000
July,6	Goods sold for cash	20,000
July,8	Purchased goods from Murali	25,000
July,9	goods returned by Murali	1,000
July,10	purchased goods for cash	15,000
July,12	cash deposited into the bank	21,000
July,18	cash withdraw from bank for office purpose	10,000
July,8	goods sold to Ramesh on credit	8,000
July,28	Stock used for personal purpose	1,000

11. Prepare a three column cash book from the following particulars.

2014	Jan,1	Cash Balance	
		15,000	
		Bank Balance	
		50,000	
	Jan,2	Cash sales	
		40,000	
	Jan,5	Furniture purchased and Issued cheque	8,000
	Jan,7	Cash Deposited into Bank	
		40,000	
	Jan,10	Received from Vishnu	15,000
		Discount allowed	500
	Jan,12	Received cheque from Gopi and deposited in The Bank	8,000
	Jan,15	Gopi's cheque dishonored	
		8,000	

(OR)

12. Prepare Trial Balances from the following particulars

Outstanding Expenses	1,500	Cash	6,000
Purchaser returns	3,000	Loan	4,500
Purchases	42,000	Machinery	3,000
Capital	30,000	Sales	16,000
Office expenses	9,000	Reserve fund	2,000
Creditors	3,000	Furniture	2,000
Bank O.D	1,500	Wages	1,000
Interest Received	1,500		

13. From the following particulars prepare bank reconciliation statement

Overdraft as per cash book on 31-12-2009 is Rs.10,540

Interest on overdraft for six months Rs.240

Interest on investments collected by bank Rs.300

Bank Charges Rs.60

Cheques issued but not cashed by customers prior to 31st December is Rs.42,000

Cheques paid into Bank but not collected before 31st December is Rs.4,200

A Bill receivable for Rs. 1,000 discounted in the bank in November was dishonoured on December 31st

(OR)

14. From the following particulars prepare bank reconciliation statement

Bank balance as per pass book on 31-12-2015 is Rs. 10005

Interest on credit by banker for six months Rs. 240

Interest on investments collected by bank Rs. 300

Bank Charges Rs. 60

Cheques issued but not cashed by customers prior to 31st December is Rs. 42,00

Cheques paid into Bank but not collected before 31st December is Rs. 4,200

A Bill receivable for Rs. 1,000 discounted in the bank in November was dishonoured on December 31st

15. Prepare final Accounts from the following particulars as on 31st March, 2014.

Debit	Rs.	Credit	Rs.
Cash in hand	540	Sales	98,780
Cash in Bank	2,630	Purchase Returns	500
Purchases	40,675	Capital	62,000
Sales return	680	Creditors	6,300
Wages	8,480	Rent	9,000
Fuel and power	4,730		
Carriage outward	3,200		
Carriage inward	2,040		
Goods (1.4.07)	5,760		
Salaries	18,000		
Insurance	600		
Drawings	5,245		
Machinery	44,500		
Debtors	39,000		
	1,76,580		1,76,580

Adjustments:

Stock as on 31st March, 2014 Rs. 6,800

provide 10% depreciation on Machinery

Bad debts Rs. 725

Unexpired Insurance Rs. 170

(OR)

16. Prepare the final accounts for the following

Land and Building	14,000	Machinery	8,000
Furniture	12,000	bank loan	18,000
Bills payable	1,000/-	bills receivable	2,000
Prepaid rent	1,000/-	income received	
in Advance	100/-		

Outstanding Expenses	1,500	Cash	6,000
Purchasereturns	3,000	Loan	4,500
Purchases	42,000	Machinery	3,000
Capital	30,000	Sales	16,000
Officeexpenses	9,000	Reservefund	2,000
Creditors	3,000		


Adjustments:

- a. Stock on 31st March, 2016 Rs. 16,900
- b. Provide 10% depreciation on Machinery
- c. Provide reserve for Bad debts 5%
- d. Income received in advance 150/-

17. The Book value of plant and Machinery on 1-1-2011 was Rs. 2,00,000. New machinery for Rs. 10,000 was purchased on 1.10.2011 and for Rs. 20,000 on 1.7.2012. On 1-4-2013 a machinery whose book value had been Rs. 30,000 on 1.1.2011 was sold for Rs. 16,000 and the entire amount was credited to plant and machinery account. Depreciation had been charged at 10% per annum on diminishing balancing method. Show the plant and machinery Account from 1.1.2011 to 31.12.2013

(Or)

18. Explain the different methods of calculating depreciation.

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

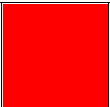
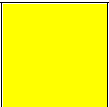

Course Objectives:

- 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, NewYork.

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://link.springer.com/chapter/10.1007%2F978-3-662-03460-6_2
- https://hartman.byu.edu/docs/475Files/Stat475_Chapter2.pdf

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

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) -2022-23
II B.Sc. Statistics/Semester-IV- Actuarial Science
Paper – IV-Survival Models
(MODEL QUESTION PAPER)

Time: 2 1/2hrs

Max Marks: 50

SECTION-A

Answer any FIVE questions

5x4 = 20M


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. Explain about duplicate policies on estimates
7. Define complete and curate expectation of life. Derive the relation between them.
8. Explain methods of graduation

SECTION-B

Answer any THREE questions from the following:

3x10= 30M

9. Explain the Need, benefits and limitations of models
10. 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.

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

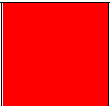
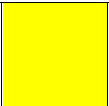

Course Objectives:

- 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://link.springer.com/chapter/10.1007%2F978-3-662-03460-6_2
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 2022-2023
II B.Sc. (MSAS) PAPER – V
SEMESTER-IV
BASICS OF LIFE CONTINGENCY

Time: 2 1/2 Hrs.

Max.marks:50

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

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (V Sem) PAPER-VI			
Course Code SAS104	TITLE OF THE COURSE Life Contingency-1				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	To have knowledge in Mathematics and Statistics and Insurances		6	0	3

Course Objectives:

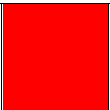
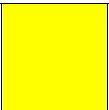

The Objective of this course is to

1. gain knowledge about insurance and its features
2. 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

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, Differential Equation, Death strain at risk(DSAR), Expected death strain(EDS),Actual death strain (ADS), Mortality profit, Mortality profit on a portfolio of policies.

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.

Textbooks:

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

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).

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Web Links:

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- <https://learn.filtered.com/blog/the-principles-of-modelling>
- https://en.wikipedia.org/wiki/Survival_analysis
- https://link.springer.com/chapter/10.1007%2F978-3-662-03460-6_2
- 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] Rajamahendravaram
CBCS SYLLABUS (Semester Wise) -2022-23
III B.Sc. Statistics/Semester-VI- Actuarial Science
LIFE CONTINGENCIES-I Paper-VI—A1
(MODEL QUESTION PAPER)

Time: 2 1/2hrs

Max Marks: 50

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:

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.?

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (V Sem) PAPER-VII			
Course Code SAS105	TITLE OF THE COURSE Life Contingency-2				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites	To have knowledge in Mathematics and Statistics and Insurances	0	6	0	3

Course Objectives:

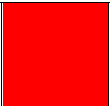
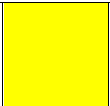

The Objective of this course is to

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

Textbooks:

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

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

Web Links:

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https://en.wikipedia.org/wiki/Survival_analysis

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] Rajamahendravaram
CBCS SYLLABUS (Semester Wise) -2022-23
III B.Sc. Statistics/Semester-VI- Actuarial Science
LIFE CONTINGENCIES-II
Paper-VII-A2
(MODEL QUESTION PAPER)

Time: 2 1/2hrs

Max Marks: 50

SECTION-A

Answer any FIVE questions :

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

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?

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (V Sem) PAPER-VI			
Course Code SAS106	TITLE OF THE COURSE PRINCIPLES OF INSURANCE- B1				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	To have knowledge in Mathematics and Statistics and Insurances		6	0	3

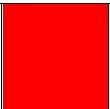
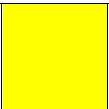

CourseObjectives:

- 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 Risk Management
CO2	Work on Insurance Market
CO3	Work on benefits of insurance on Insurance Customers
CO4	Calculate the Insurance Contract
CO5	Learn about Insurance Terminology

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	
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Syllabus:

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.

Textbooks:

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

Referencebooks:

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

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://link.springer.com/chapter/10.1007%2F978-3-662-03460-6_2

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
CBCS SYLLABUS (Semester Wise) -2022-23
III B.Sc. Statistics/Semester-VI- Actuarial Science
PRINCIPLES OF INSURANCE-Paper-VI-B1
(MODEL QUESTION PAPER)

Time: 3hrs

Max Marks: 50

SECTION-A

Answer any FIVE questions

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

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?

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (V Sem) PAPER-VII			
Course Code SAS107	TITLE OF THE COURSE PRACTICE OF INSURANCE- B2				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	To have knowledge in Mathematics and Statistics and Insurances	0	6	0	3

Course Objectives:

The Objective of this course is to

1. gain knowledge about insurance and its features
2. 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 Premiums and bonuses
CO3	Work on Plans of Life Insurance
CO4	Calculate the Annuities
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

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.

Textbooks:

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

Referencebooks:

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

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://link.springer.com/chapter/10.1007%2F978-3-662-03460-6_2

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
CBCS SYLLABUS (Semester Wise) -2022-23
III B.Sc. Statistics/Semester-VI- Actuarial Science
PRACTICE OF INSURANCE(Cluster-2,Paper-2) Paper –VII-B2
(MODEL QUESTION PAPER)

Time: 2 1/2hrs

Max Marks: 50

SECTION-A

Answer any FIVE questions

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

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

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (V Sem) PAPER-VI			
Course Code SAS108	TITLE OF THE COURSE SURVICAL ANALYSIS AND BIO STATISTICS				
Teaching	Hours Allocated: 60 (Theory)	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 survival distribution and its applications

CourseOutcomes:

On Completion of thecourse, the students will be able to-	
CO1	To learn about Survival distributions
CO2	To learn about Censoring Schemes
CO3	Work on Competing Risk Theory
CO4	To learn about Stochastic epidemic Models
CO5	To learn about Statistical Genetics

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	
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Syllabus:

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

Textbooks:

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

Referencebooks:

1. Biswas Applied stochastics Process
2. Medical biostatisticsby Indrayn A (2008)

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
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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] Rajamahendravaram
CBCS SYLLABUS (Semester Wise) -2022-23
III B.Sc. Statistics/Semester-VI- Actuarial Science
SURVIVAL ANALYSIS AND BIO STATISTICS
Paper-VI-C1
(MODEL QUESTION PAPER)

Time: 2 1/2hrs

Max Marks: 50

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-I 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
13. **Discuss** Genotype, Phenotype, Dominance, Excessiveness, linkage and recombination

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (V Sem) PAPER-VII			
Course Code SAS109	TITLE OF THE COURSE ACTUARIAL APPLICATIONS				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	To have knowledge in Mathematics and Statistics and Insurances		6	0	3

Course Objectives:

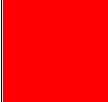
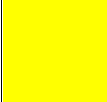

The Objective of this course is to

1. Gain knowledge about insurance and its features
2. study about life tables and its uses in estimating the survival rate or mortality rates
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 Multiple Decrement Model
CO2	Work on Application of multiple decrement theory
CO3	Work on Profit testing
CO4	Calculate the commutation function
CO5	Calculate amount of Pension funds

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	
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Syllabus:

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-I

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, Profit criterion.

Unit:4 Profit testing-II

Determining reserves using profit testing, Zeroizing 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. (1986), Actuarial Mathematics, The society of actuaries.

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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
CBCS SYLLABUS (Semester Wise) -2022-23
III B.Sc. Statistics/Semester-VI- Actuarial Science
ACTUARIAL APPLICATIONS Paper-VI-C2
(MODEL QUESTION PAPER)

Time: 2 1/2hrs

Max Marks: 50

SECTION-A

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

5 x4 = 20M

1. **Write about** Random Survivorship Group
2. **Explain** Associated single Decrement tables
3. **Explain** Benefit premium and reserves
4. **Explain** multiple decrement tables
5. **Explain** Discounted emerging costs
6. **Write about** Equity-linked insurance
7. **Explain** Pension funds
8. **Explain** Funding plans

SECTION-B

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

3x10 = 30M

9. **Explain** Multiple Decrement Model
10. **Explain** multiple state Markov model, Kolmogorov forward equations
11. **Explain** Stochastic profit testing, Stochastic pricing, Stochastic reserving
12. **Explain** net present value the profit margin, determining
premiums using profit test
13. **Discuss** valuation of benefits: Final salary plans, Career average earnings plans.