GOVERNMENT COLLEGE (A) RAJAMAHENDRAVARAM
CBCS SYLLABUS (Semester Wise) 2023-24
MAJOR-1-Descriptive Statistics
MODEL QUESTION PAPER

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

SECTION-A

Answer any FIVE questions.   **5X4= 20M**

1. **What is Statistics and its applications?**

2. **Explain types of classification?**

3. **Explain about measurement of scales?**

4. **Explain about Tabulation?**

5. **Define Moment? Explain types of moments?**

6. **Find Mean, Median and Mode to the following data 6,6,7,8,8,8,2,5,6,9, and 5**

7. **Define Probability and its Properties?**

8. **Explain additional theorem for 2 events?**

SECTION – B

Answer Any THREE questions.   **3X10=30M**

9. **What do you understand by collection of data? Discuss different methods**
(OR)

10. **Draw a Histogram ,Frequency polygon and Ogive curve to the given data**

Class Intervals	0-10	10-20	20-30	30-40	40-50
Students	12	24	15	7	11

11. **Describe the different measures of Dispersion and discuss their merits and demerits.**

(OR)

12. **Explain the methods of measuring skewness and kurtosis of a frequency distribution.**

13. **Explain types of Probability with its merits and demerits?**

(OR)

14. **A box contains 6 red,4 white and 5 black balls. A person draws 4 balls from the box at random. Find the probability that among the balls drawn there at least one ball of each color**

Government College [A] Rajamhendravaram
CBCS SYLLABUS (Semester Wise) 2023-24
I B.Sc Statistics/Semester-II
MAJOR-2: RANDOM VARIABLES AND MATHEMATICAL EXPECTATIONS

Time: 2 ½ hrs   MODEL PAPER   Max Marks: 50

SECTION-A

Answer any FIVE questions.   **5 X4 =20M**

1. Write short note on Random variables?

2. Explain Cauchy - Schwartz inequalities

3. Explain p.m.f and p.d.f ?

4. Explain Bi-variate Random Variables?

5. Explain CF and its Properties?

6. Explain Population, sample with examples

7. What are WLLN?

8. What is Lindberg – Levy CLT?

SECTION-B

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

9. A random variable X has the following function

X	-2	-1	0	1	2	3
P(X)	0.1	K	0.2	2K	0.3	K

Find (i) Mean and variance
    (ii)Construct distribution function and draw its graph

OR

10. Explain Distribution function and its properties ?

11. Explain   i)$E(X+Y)= E(X)+E(Y)$

    ii)$E(XY)=E(X)E(Y)$

OR

12. Explain Chebyshev Inequality

13.Explain MGF and its Properties

OR

14. Explain about concept of Central limit theorem

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

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CBCS SYLLABUS (Semester Wise) 2023-24
II B.Sc Statistics/Semester-III
Paper-III-STATISTICAL METHODS
MODEL QUESTION PAPER (THEORY)

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

SECTION-A

Answer any FIVE questions. All questions carry equal marks.   **5 x 4 =20M**

1. What is Correlation and it types?

2. Explain Regression?

3. Explain Regression coefficients?

4. Explain about Scatter Diagram?

5. Explain types of association in Attributes?

6. Explain differences between Correlation and Associations?

7. Apply Straight line for the given data

X	1	2	3	4	5
Y	5	7	9	10	11

8. What are Population, Sample ,Parameter and Statistic ?

SECTION-B

Answer any THREE questions. All questions carry equal marks.   **3 x 10 = 30M**

9. Define Rank correlation and derive its equation with its Properties?

(OR)

10. Explain Partial and Multiple Correlation Coefficients?

11. What are Regression lines? Explain Regression lines on X on Y

(OR)

12. Fit Second Degree Equation for the given data

X	10	15	20	25	30	35	40
Y	11	13	16	20	27	34	41

13. What is consistency of data? Explain conditions for consistency of data?

(OR)

14. Explain Chi-square, t and F- distributions with its properties

Government College [A] Rajamhendravaram
CBCS SYLLABUS (Semester Wise) 2023-24
II B.Sc Statistics/Semester-IV
Paper-IV-Inferential Statistics
MODEL QUESTION PAPER (THEORY)

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

SECTION-A

Answer any FIVE questions. All questions carry equal marks.   **5 x 4 =20M**

1.   What is MLE and write its properties

2.   Explain Confidence Intervals.

3.   Explain Null hypothesis and Alternative hypothesis.

4.   Define one tailed and two tailed tests.

5.   Explain Testing procedure of Hypothesis?

6.   Explain paired t- test.

7.   Explain about sign test for one sample ?

8.   What is Non Parametric Test? Write the assumptions of non parametric tests?

SECTION-B

Answer any THREE questions. All questions carry equal marks.   **3 x 10 = 30M**

9. Explain the criteria of a good estimator.

(OR)

10. State and prove Neyman-Pearson's Lemma.

11. Explain the test procedure for
      (i) Testing of Mean and (ii) Equality of two means

(OR)

12. Fit a binomial distribution for the following data test goodness of fit

X	0	1	2	3	4	5	6
f	5	18	28	12	7	6	4

13. What are the differences between parametric tests non-parametric tests?

(OR)

14. Explain Median Test?

GOVERNMENT COLLEGE (A) RAJAMAHENDRAVARAM
II B.Sc. Statistics (Semester-IV) 2023-24
(With Mathematics Combination)
Paper-V- Sampling Techniques & Design of Experiments
MODEL QUESTION PAPER (THEORY)

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

SECTION-A

Answer any FIVE questions.   5 X4 =20M

1   Distinguish between census survey and sample surveys.

2   Explain Differences between SRSWR and SRSWOR.

3   Explain Systematic Sampling.

4   What are different types of sampling

5   Explain types of allocation in stratified sampling.

6   Systematic Sampling VS Stratified Sampling

7   Explain the purpose of ANOVA.

8   Explain CRD

SECTION-B

Answer any THREE questions.   3 x 10 = 30 M

9   What are principal steps in a sample survey.

(OR)

10   Derive the variance of the sample mean in SRSWOR

11   If the population consists of linear trend, then prove that
     $V(Y_{st}) \leq V(Y_{sys}) \leq V(Y_n)_R$

(OR)

12   How do you allocate samples in Stratified Sampling?

13   Discuss about basic principles of experimentation

(OR)

14   Explain LSD and merits, demerits of LSD

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CBCS SYLLABUS (Semester Wise) 2023-24
III B.Sc Statistics/Semester-V
OPTIMIZATION TECHNIQUES ((Cluster-1, Paper-1) Paper –VI-A1
MODEL QUESTION PAPER (THEORY)

Time: 2 1/2 hrs   MaxMarks: 50

SECTION-A
Answer any FIVE questions. All questions carry equal marks.   **5 x 4=20M**

1. Write advantages and disadvantages of O.R
2. Explain the slack and surplus Variables
3. Explain General LPP
4. Explain Concept of Two –Phase Method
5. Explain assignment problem as a special case of TP.
6. Explain unbalanced assignment problem?
7. Explain Hungarian method of Assignment problem?
8. How do you obtain a sequence?

SECTION-B
Answer Any THREE questions. All questions carry equal marks.   **3 x 10= 30M**

9. Describe the Nature and Scope of O.R

   (OR)

10. Solve the Following LPP by using Graphical Method
    Maximize $Z=45X_1+80X_2$
    Subject to const: $5X_1 +20X_2 \le 400$ $10X_1+15X_2 \le 450$ $X_1,X_2 \ge 0$

11. Use simplex Method to solve the following LPP
    Maximize $Z=X_1-X_2+3X_3$
    Subject to const: $X_1+X_2+X_3 \le 10$ $2X_1-X_3 \le 2$ $2X_1-2X_2+3X_3 \le 0$, $X_1,X_2,X_3 \ge 0$

    (OR)

12. Solve the following Transportation Problem by using VAM.

	D_1	D_2	D_3	Supply
O_1	50	30	220	1
O_2	90	45	170	3
O_3	400	200	50	5
Demand	5	2	2	9

13. Give an algorithm for n job-2 machines problem.

   (OR)

14. Solve the following Assignment Problem

	D_1	D_2	D_3	D_4
O_1	10	25	15	20
O_2	15	30	5	15
O_3	35	20	12	24
O_4	17	25	24	20

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CBCS SYLLABUS (Semester Wise) 2023-24
III B.Sc Statistics/Semester-V
(With Mathematics Combination)
OPERATION RESARCH   Paper –VII-A2
MODEL QUESTION PAPER (THEORY)

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

SECTION-A
Answer Any FIVE questions. All questions carry equal marks.   **5x 4= 20M**

1. **Explain pure and mixed strategies.**
2. **Explain different types of inventories.**
3. **Explain the determination of EOQ with one price break.**
4. **Write about game theory.**
5. **Write basic steps in PERT technique**
6. **Write rules for drawing net work diagram.**
7. **Explain Errors in networking**
8. **Write short note on queuing theory.**

SECTION-B

Answer any THREE questions. All questions carry equal marks.   **3x10=30**

9. **Apply graphical method to solve graphically**

	B1	B2	B3	B4
A1	4	-2	3	-1
A2	-1	2	0	1
A3	-2	1	-2	0

(OR)

10. **a) Explain the cost associate with inventories**
    b) Explain probabilistic inventory models without setup cost

11. **Apply Critical Path Method for the following data**

Activity	1-2	1-3	1-4	3-4	3-5	5-7	5-6
Normal time	4	7	6	5	7	6	5

(OR)

12. **Explain the differences between CPM and PERT**

13 . **Explain classification of Queuing System**

(OR)

14. **Explain Poisson queuing system.**

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CBCS SYLLABUS (Semester Wise) 2023-24

III B.Sc Statistics/Semester-V

DEMOGRAPHY & VITAL STATISTICS-VI-B1
MODEL QUESTION PAPER (THEORY)

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

SECTION-A

Answer Any FIVE questions. All questions carry equal marks.   5x 4 = 20M

1. What are the errors that occur in the census and registration data

2. Explain about population composition

3. Distinguish between Stationary and Stable population

4. Mention the uses of life tables

5. Explain abridged life tables

6. Explain Crude rate of natural increase

7. What are the uses of vital statistics

8. What are the assumptions of life table

SECTION-B

Answer Any THREE questions. All questions carry equal marks.   3x 10= 30M

9. Derive the Chandra Sekharan-Deming Formula

(OR)

10. Explain the Various Mortality Rates

11. Explain the Uses of Myer and UN indices

(OR)

12. Explain about the measurement of population growth

13. Explain types of migration

(OR)

14. Explain types of Urbanization

GOVERNMENT COLLEGE (A) RAJAMAHENDRAVARAM
CBCS SYLLABUS (Semester Wise)2023-24
III B.Sc. Statistics (SemesterV)
(With Mathematics Combination)
Quality & Reliability paper-VI -B2
MODEL QUESTION PAPER (THEORY)

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

SECTION-A

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

1. **What are 3 sigma limits? Give their importance in S.Q.C**

2. **Discuss about Process control and Product control**

3. **Explain the construction of C chart**

4. **Explain about Acceptance Sampling.**

5 **Explain Producer's Risk and Consumer's Risk.**

6 **Explain Bath Tub Curve**

7 **Explain Hazard function.**

8 **Explain Reliability function**

SECTION-B

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

9. Define SQC? Explain its usage in industry.

(OR)
10. Explain the construction of X and R charts.

11. What are SSP and DSP? Write their merits demerits
(OR)
12. Define O.C. and A.S.N functions w.r.to single sampling plan for Attributes.

13. Explain the method of system reliability in series configuration
(OR)

14.Explain System reliability

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CBCS SYLLABUS (Semester Wise) 2023-24
III B.Sc. Statistics/Semester-V
(With Mathematics Combination)
REGRESSION ANALYSIS Paper –VI –C1
MODEL QUESTION PAPER THEORY

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

SECTION-A

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

1. Explain Regression
2. Explain Simple Regression model
3. Explain Deletion of data points
4. Explain the Transformation of variables
5. Explain Least squares method
6. Give the assumptions for Regression
7. Explain about Multiple regression model
8. Explain Auto correlation

SECTION-B

Answer Any THREE following questions   **3X10=30M**

9. Explain reasons for introducing error term in the model

(OR)

10. Describe general linear model

**11.Define Selection of variables Forward selection procedure Backward
    Elimination procedure Stepwise method**

(OR)

12. Describe Ridge method

13.Explain Multi co-Linearity

(OR)

14.Explain Ridgemethod

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CBCS SYLLABUS (Semester Wise)-2023-24

III B.Sc. Statistics/Semester-V

(With Mathematics Combination)

Forecasting Methods Paper –VII-C2

MODEL QUESTION PAPER (THEORY)

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

SECTION-A

Answer any FIVE   questions.   5 x 4= 20M

1. **Explain Simulation Method**
2. **Explain Time series**
3. **Explain Stationary and non-Stationary methods**
4. **What are the sources of Smoothing methods**
5. **Explain White Noise process**
6. **Explain different types of moving averages method**
7. **Explain Decomposition Method**
8. **Explain AR & ARMA**

SECTION-B

Answer any THREE questions.   3 x 10 = 30M

9. Explain Exponential Methods
                         (OR)
10. Explain ARIMA

11. Explain ratio to trend Moving averages method.
                         (OR)
12. Explain Auto correlation and Auto Covariance process

13. Explain the procedure of Non-stationary in a time series.
                         (OR)
14. Explain Determining randomness of data