

BLDEA's
SB Arts and KCP Science College Vijayapur

Department of Statistics

First Internal Assessment 2022-23

Subject: Descriptive Statistics (DSC)

Time: 1hr

Date: 30/11/2022

Semester: BSc-I Sem

Max. Marks: 30

Part- A

I. Answer any FIVE of the following questions.

5×2=10

1. Define the term SRS.
2. Define Quantitative Data and Qualitative Data.
3. Define Time Series.
4. Find A.M. of first n-Natural numbers.
5. Write any two merits of Mode.
6. State any two properties of A.M.

Part-B

II. Answer any TWO of the following questions.

2×5=10

1. What is Tabulation? And represent its format.
2. Show that the sum of deviations of given values from their Arithmetic Mean is zero.
3. Find A.M. of the followings, $1^2, 2^2, \dots, n^2$.

Part -C

III. Answer any ONE of the following questions.

1×10=10

1. Explain the procedure of tabulation.
2. Prove that
 - i. $AM \geq GM \geq HM$
 - ii. $G^2 = A.H$

BLDEA's
SB Arts and KCP Science College Vijayapur
Department of Statistics

First Internal Assessment 2022-23

Subject: Statistical Methods (OEC)

Time: 1hr

Date: 30/11/2022

Semester: BSc-I Sem

Max. Marks: 30

Part- A

I. Answer any FIVE of the following questions.

5×2=10

1. Define Measures of Central tendency.
2. Calculate Mean- 25,30,32,40,44.
3. Calculate Range and it's Co-efficient- 38,45,56,48,60,62.
4. Which is Ideal Measures of Central tendency and Dispersion?
5. If $Q_1=25$ and $Q_3=68$ then find Quartile Deviation.
6. Write the formula for Mode and Standard deviation.

Part-B

II. Answer any TWO of the following questions.

2×5=10

1. Calculate Median

C.I.	10-20	20-30	30-40	40-50	50-60
f	5	10	18	8	4

2. Calculate mean deviation from mode

C.I.	0-10	10-20	20-30	30-40	40-50	50-60	60-70
f	2	4	10	15	8	6	3

3. Calculate Standard deviation
10,15,18,20,25,22.

Part -C

III. Answer any ONE of the following questions.

10×1=10

1. Calculate Q_1 , D_5 and P_{75} for the data given below

C.I.	2-4	4-6	6-8	8-10	10-12	12-14	14-16
f	6	10	18	20	8	4	2

2. For the following data find,

- i. Which factory is more consistent?
- ii. Which factory is better for the Wages?

Wages	500-600	600-700	700-800	800-900	900-1000	1000-1100	1100-1200
No. of Factory A	10	15	25	30	12	8	6
No. of Factory B	8	20	22	35	8	6	7

BLDEA's
SB Arts and KCP Science College Vijaypur
Department of Statistics
First Internal Assessment 2022-23

Subject: Calculus and Probability Distributions (DSC)

Semester: BSc-III Sem

Time: 1 Hour

Date: 21/01/2023

Max. Marks: 30

PART-A

- I. Answer any Five of the followings.** **5×2=10**
1. Define Covariance.
 2. State De-Moivre's Theorem.
 3. Define conditional expectation of X given Y.
 4. Write the properties of Uniform distribution.
 5. Define the Marginal distribution of X.
 6. Define Chi-Square distribution with 'n' degrees of freedom.
 7. Write any two applications of Chi-Square distribution.

PART-B

- II. Answer any Two of the followings.** **2×5=10**
8. State and prove Chebysheve's Inequality.
 9. Obtain MGF of Exponential Distribution.
 10. State and prove additive property of Chi-Square distribution.

PART-C

- III. Answer any One of the followings.** **1×10=10**
11. Find the constants of Uniform distribution.
 12. Derive the pdf of Chi-Square Distribution with 'n' degrees of freedom.

BLDEA's
SB Arts and KCP Science College Vijaypur
Department of Statistics
First Internal Assessment 2022-23

Subject: Inference and SQC (P-I)

Semester: BSc-V Sem

Time: 1 Hour

Date: 20/01/23

Max. Marks: 20

PART-A

I. Answer any THREE of the following questions.

2 X 3 = 6

1. What is meant by run?
2. Define Index Number.
3. Write down types of Index Number.
4. Define consumer Index Number.

PART-B

II. Answer any ONE of the following questions.

5 X 1 = 5

5. Explain Median test.
6. What are the steps involved in the construction of I. No.

PART-C

III. Answer any ONE of the following questions.

9 X 1 = 9

7. Explain run test for one sample and two sample problems.
8. Show that Fisher's index number satisfies Time Reversal Test and Factor Reversal Test.

BLDEA's
SB Arts and KCP Science College Vijaypur
Department of Statistics

First Internal Assessment 2022-23

Subject: Sampling Theory & Demography (P-II)

Semester: BSc-V Sem

Time: 1 Hour

Date: 16/01/23

Max. Marks: 20

PART-A

I. Answer any THREE of the following questions. 3×2=6

1. Define Population and Sample.
2. What are parameter and statistic in sampling survey?
3. Define non-sampling error.
4. Define SRS & expand it.
5. Define sample fraction and finite population correction.

PART-B

II. Answer any ONE of the following questions. 1×5=5

6. Define sampling and non-sampling errors. And also write the reasons for sampling errors.
7. What are the methods of selection of an SRS? And explain any one of them.
8. Prove that in an SRSWOR, the sample mean is an unbiased estimate of population mean.

PART-C

III. Answer any ONE of the following questions. 1×9=9

9. Prove that in an SRSWOR, $E(s^2) = S^2$
where, s^2 is sample mean square and S^2 is population mean square.
10. Show that in an SRSWOR, variance of estimated mean is given by
$$V(\bar{y}_n) = \left(\frac{1}{n} - \frac{1}{N} \right) S^2$$

BLDEA's

SB Arts and KCP Science College Vijayapur

Department of Statistics

Second Internal Assessment 2022-23

Subject: Descriptive Statistics(DSC)

Semester: BSc-I Sem

Time: 1 Hr

Date:11/01/2023

Max. Marks: 30

PART-A

I. Answer any Five questions 5×2=10

1. Define the term standard deviation.
2. Define (i)Meso kurtic (ii)Platy kurtic
3. Write the expression for moments about mean.
4. Define correlation.
5. Write any two merits of correlation.
6. What is Karl Pearson's Correlation Co-efficient.
7. Write the demerits of Mean Deviation.
8. Define (i)Negative Correlation (ii)Positive Correlation

PART-B

II. Answer any Two questions 2×5=10

9. Define Quartile Deviation. And also write merits and demerits of Q.D.
10. Prove that S.D. is not affected by the change of the origin.
11. Correlation Co-efficient lie between -1 and +1.

PART-C

III. Answer any One question 1×10=10

12. Derive the expression for Spearman's Rank Correlation Co-efficient.
13. Prove that the combined S.D. of two series is

$$\sigma = \left[\frac{n_1\sigma_1^2 + n_2\sigma_2^2}{n_1+n_2} + \frac{n_1n_2}{(n_1+n_2)^2} (\bar{x}_1 - \bar{x}_2)^2 \right]^{1/2}$$

BLDEA's
SB Arts and KCP Science College Vijaypur
Department of Statistics

Second Internal Assessment 2022-23

Subject: Statistical Method (OEC)

Semester: BSc-I Sem

Time: 1 Hour

Max. Marks: 30

PART-A

- I. Answer any five of the following questions.
1. Write the mean and variance of Binomial distribution.
 2. Define expectation.
 3. Define sample space.
 4. Write the properties of Normal distribution.
 5. Define positive and negative Correlation.
 6. Define Rank Correlation.
 7. Write the properties of Chi-square distribution.

5×2=10

PART-B

- II. Answer any two of the following questions.

2×5=10

8. Find the Rank correlation

X	74	87	94	69	59	79	80	49
Y	121	135	151	156	111	141	143	100

9. Find mean of the following probability distribution

X	0	1	2	3	4
P(X)	3/8	1/4	1/8	3/16	1/16

10. Define Karl Pearson's Coefficient of correlation. Write the properties.

OR

11. Find mean and variance when die is thrown.

X	1	2	3	4	5	6
Y	1/6	1/6	1/6	1/6	1/6	1/6

PART-C

III. Answer any one of the following questions.

1×10=10

12. For the data given below estimate the age of wife where husband age is 24 years.

	Husband's age	Wife's age
Mean	28	24
S.D	3	2

$r = 0.93$

13. a) Define Binomial distribution and what is mean and variance of Binomial distribution?

b) An unbiased coin is tossed 6 times, find the probability that tosses result.

(i) Heads only (ii) 3 heads and 3 tails

OR

14. Fit a regression equation of Y on X.

X	25	31	40	45	50	52
Y	40	45	50	65	70	75

BLDEA's
SB Arts and KCP Science College Vijayapur
Department of Statistics

Second Internal Assessment Test 2022-23

Subject: Calculus and Probability Distributions (DSC)

Semester: BSc-III Sem

Time: 1 Hour

Date: 09/02/2023

Max. Marks: 30

PART-A

- I. Answer any FIVE of the followings. 5 X 2 = 10**
1. Define Sequences.
 2. State MVT.
 3. Define Taylor Series expansion.
 4. What is meant by rectangular distribution?
 5. Define Geometric distribution.
 6. Write two applications of t- distribution.
 7. Define F- distribution.

PART-B

- II. Answer any TWO of the followings. 2 X 5 = 10**
8. Obtain Mean and Variance of Multinomial distribution.
 9. Obtain Mean and Variance of Negative -Binomial Distribution.
 10. Write down the relationship between t and F- distribution.
 11. Obtain Limiting form of t- distribution with n df.

PART-C

- III. Answer any ONE of the followings. 1 X 10 = 10**
12. Derive Mean and Variance of Hyper- Geometric Distribution.
 13. Obtain moments of t- distribution with n df.
 14. Derive the pdf of F- distribution with (n_1, n_2) df and mention its Mean and Variance.

BLDEA's SB Arts and KCP Science College, Vijayapur
Department of Statistics

Second Internal Assessment 2022-23

Subject: Sampling Theory & Demography P-II

Semester: BSc-V Sem

Time: 3 Hrs

Max.Marks:80

Date: 08/02/2023

PART-A

- I. Answer any TEN questions. Each question carries TWO marks. $10 \times 2 = 20$
1. Differentiate between population and sample.
 2. What do you mean by non-sampling errors?
 3. Name the some sets of random number tables commonly used in practice.
 4. What do you mean by sampling fraction and finite population correction?
 5. Define stratified random sampling.
 6. Write the expression for gain in precision due to stratified random sampling over SRS.
 7. Define systematic sampling.
 8. Write any two demerits of systematic sampling.
 9. Name the types of mortality rates.
 10. Define GRR.
 11. Mention the various assumptions made in the construction of a life table.
 12. Define Cohort and Longevity.

PART-B

- II. Answer any FOUR questions. Each question carries FIVE marks. $4 \times 5 = 20$
13. Explain the principles of sample survey.
 14. Name the different methods of selecting an SRS. Explain any one of them.
 15. With usual notation prove that
$$\text{Var}(\bar{y}_{st})_{prop} \leq \text{Var}(\bar{y}_n)_R$$
 16. With usual notation prove that
$$\text{Var}(\bar{y}_{sys}) = (N-1)/N S^2 - k(n-1)/N S_{wsy}^2$$
 17. Explain NRR.
 18. Explain the terms central mortality rate and expectation of life.

PART-C

- III. Answer any FOUR questions. Each question carries TEN marks. $4 \times 10 = 40$
19. Discuss the advantages and disadvantages of sample survey over census.
 20. With usual notation prove that
$$\text{Var}(\bar{y}_n)_R = (N-n)/Nn S^2$$
 21. In stratified sampling, prove that $\text{Var}(\bar{y}_{st})$ is minimum for fixed total sample size n , if $n_i \propto N_i S_i$ and obtain $\text{Var}(\bar{y}_{st})_{Ney}$.
 22. With usual notation prove that
$$\text{Var}(\bar{y}_{sys}) = (nk-1) / nk S^2/n [1+(n-1)p]$$
 23. a) Mention the sources of vital statistics. Explain any one of them.
b) Explain standardized death rate.
 24. Define life table. Explain various components of life table.

BLDEA's
S.B. Arts and K.C.P. Science College, Vijayapur
Department of Statistics
Lab. Internal Assessment 2022-23

Subject: Probability and Distributions
Time: 1 Hour

Semester: BSc-II
Max.Marks:20

Note: 1. Attempt any TWO questions.
2. Each question carries 10 marks.

1. Two dice are thrown, find the probability that
- (i) Both dice are show same number
 - (ii) The sum of the numbers is 7 or 10.
 - (ii) The sum of the numbers is divisible by 3
 - (iv) Product of the numbers is perfect square.
 - (v) The sum of the numbers is 5 or 8.

2. Coins are tossed 128 times and following distribution is obtained

No. of heads	0	1	2	3	4	5	6	7
No. of tosses	7	7	21	30	26	20	14	3

3. Fit a Possoin distribution to the following data and hence find the theoretical frequencies.

X	0	1	2	3	4	5	6	7
Frequency	132	58	34	12	9	3	2	0

BLDEA's
S.B. Arts and K.C.P. Science College, Vijayapur
Department of Statistics
Lab. Internal Assessment 2022-23

Subject: Statistical Inference-I
Time:1 Hour

Semester: BSc-IV
Max.Marks:20

Note: 1. Attempt any TWO questions.

2. Each question carries 10 marks.

1. For the population with pdf $f(x, \theta) = (1/\theta) e^{-x/\theta}$ where $0 < x < 1$. Obtain MLE of θ based on the following sample observations.
0.2, 0.4, 0.5, 0.8, 0.7, 0.9, 0.75, 0.95
2. A sample of size 900 has been drawn with mean 3.4 and standard deviation 2.61, if the population is Normal and its mean is unknown. Find 95% and 99% of confidence limits of the population mean.
3. A single observation is drawn from a Poisson distribution to test $H_0: \lambda = 1$ against $H_1: \lambda = 2$, reject H_0 if observed value $x \geq 2$. Find Type-I error, Type-II error and power of test.
4. Samples of 3000 persons were selected at random from a city. In this sample there were 1632 males. Does this information support the view that the number of males and females are equal in city? Test at 1% level of significance.

BLDEA's
S.B. Arts and K.C.P. Science College, Vijayapur
Department of Statistics

Lab. Internal Assessment 2022-23

Subject: Design of Experiments (P-I)

Semester: BSc-VI

Time: 1 Hour

Max. Marks: 10

I. Answer any One of the following questions 10×1=10

1. Three treatments A, B, C are compared in Completely Randomized Design with four replications each. Analyze the yield and state your conclusion for the following data.

A	B	A	C	B	C	C	B	A	C	B	A
81	75	49	28	59	55	48	57	65	48	36	79

2. Below is the given yield and plan of 2^2 -Factorial Experiment individualizing 2 factors N and S each at 2 levels 0 and 1. Analyze the design.

I

l	s	ns	n
49	46	40	36

II

l	s	ns	n
47	47	39	39

III

l	s	ns	n
54	46	50	40

IV

l	s	ns	n
50	52	37	52

V

l	s	ns	n
51	50	47	37

VI

l	s	ns	n
54	52	46	54

3. Estimate the missing observation of the following randomized block design and carryout the analysis.

C	A	B	D
22	18	27	12

D	C	A	B
27	18	16	22

B	A	D	C
18	-	17	11

A	C	D	B
15	23	17	10

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S.B. Arts and K.C.P. Science College, Vijayapur
Department of Statistics

Lab. Internal Assessment 2022-23

Subject: Operation Research (P-II)

Time: 1 Hour

Semester: B.Sc-VI

Max.Marks:10

Note: 1. Attempt any ONE questions.

2. Each question carries 10 marks.

1(a) Solve the LPP by Simplex method

$$\begin{aligned} \text{Max } Z &= 3X_1 + 2X_2 \\ \text{s.t } X_1 + X_2 &\leq 4 \\ X_1 - X_2 &\leq 2 \\ X_1, X_2 &\geq 0 \end{aligned}$$

(b) Solve the LPP by Graphical method

$$\begin{aligned} \text{Max } Z &= 10X_1 + 5X_2 \\ \text{s.t } X_1 + X_2 &\leq 1 \\ X_1 + 2X_2 &\leq 2 \\ X_1, X_2 &\geq 0 \end{aligned}$$

2(a) Calculate the IBFS for the following TP by NWCR method

Source	Destination				Supply
	D ₁	D ₂	D ₃	D ₄	
S ₁	21	16	15	3	11
S ₂	17	18	14	23	13
S ₃	32	27	18	41	9
Demand	6	10	12	50	

(b) Solve the following assignment problem.

Sales man	Districts				
	A	B	C	D	E
1	32	38	40	28	40
2	40	24	28	21	36
3	41	27	33	30	37
4	22	38	41	36	36
5	29	33	40	35	39

BLDEA'S
S.B.ARTS AND KCP SCIENCE COLLEGE, VIJAYAPUR
DEPARTMENT OF STATISTICS
FIRST INTERNAL ASSESSMENT TEST 2022-23

SUBJECT: PROBABILITY AND DISTRIBUTIONS

DATE:11/07/2023

SEMESTER:B.Sc- II

Max.Marks:30

Time : 1 Hr

SECTION-A

Q- I. Answer any FIVE of the following questions.

5 X 2 = 10

1. Define random experiment.
2. Define favorable events.
3. If A^1 is complimentary event of A then show that $P(A^1) = 1 - P(A)$.
4. Define random variable.
5. Write down the types of random variable.
6. Define pmf and pdf.

SECTION-B

Q- II. Answer any TWO of the following questions.

2 X 5 = 10

7. State and prove addition theorem of probability.
8. If X is a random variable ,a and b are constants then prove that
(i) $E(aX + b) = aE(X) + b$ (ii) $V(aX + b) = a^2V(X)$
9. Define the terms (i) Discrete random variable (ii) Continuous random variable
(iii) Mathematical expectation.
- 10.State and prove multiplication theorem of probability.

SECTION-C

Q- III. Answer any ONE of the following questions.

1X 10 = 10

11. State and prove Baye's theorem of probability.
12. Find the value of K for the following pdf and hence find mean
$$F(X) = k(x+4)/8 \quad 0 < X < 1$$
$$= 0 \quad \text{O.W}$$

BLDEA'S
S.B.ARTS AND K.C.P. SCIENCE COLLEGE, VIJAYAPUR
DEPARTMENT OF STATISTICS
FIRST INTERNAL ASSESSMENT TEST 2022-23

SUBJECT: Business Statistics
DATE:12/07/2023
SEMESTER: B.Sc- II (OEC)

Max.Marks:30
Time : 1 Hr

SECTION-A

I. Answer any FIVE of the following questions.

5 X 2 = 10

1. Define Index Numbers.
2. State any two characteristics of Index Numbers.
3. If $P_{01}^P = 270$ and $P_{01}^L = 260.8$ then find P_{01}^F .
4. Write the types of Index Numbers.
5. Write the formula for Dorbish-Bowley's Index Number.
6. Define (i) Base year and (ii) Current year.

SECTION-B

II. Answer any TWO of the following questions.

2 X 5 = 10

7. The following are the prices(in RS.) of commodities in 2005 and 2010. Calculate a price index based on price relative using AM.

	Year	A	B	C	D	E	F
Price (in Rs.)	2005	45	60	20	50	85	120
	2010	55	70	30	75	90	130

8. Compute Kelly's Price Index Number for 2005 from the following data.

Commodity	Price(in Rs.)		Quantity
	2000	2005	
A	15	22	15.5
B	20	27	12.5
C	04	07	7.5
D	10	20	7.5

9. (a) If Laspeyres's index number is 150.3 and Paasche's index number is 144.6. Find Dorbish-Bowley's and Fisher's index number.
(b) If $P_{01}^L = 220.6$ and $P_{01}^{DB} = 228.4$ then find P_{01}^P .

SECTION-C

III. Answer any ONE of the following questions.

1X 10 = 10

10. Compute Marshall- Edgeworth's & Fisher's index numbers for 2000 from the following data.

Commodity	1995		2000	
	Price(Rs.)	Quantity	Price(Rs.)	Quantity
A	6	50	10	56
B	2	100	2	120
C	4	60	6	60
D	10	30	12	24
E	8	40	12	36

PTO

11. Compute Dorbish-Bowley's and Fisher's index numbers.

Items	Base Year		Current Year	
	Price per unit (Rs.)	Total expenditure Rs.	Price per unit (Rs.)	Total expenditure Rs.
1	2	50	5	60
2	4	20	8	48
3	1	8	2	20
4	5	30	10	70

BLDEA's
S.B. Arts and K.C.P. Science College, Vijaypur
Department of Statistics
First Internal Assessment 2022-23

Subject: Statistical Inference-I
Time: 1 Hour

Semester: BSc-IV
Max. Marks: 30

PART-A

I. Answer any Five of the following questions.

5×2=10

1. What are the characteristics of good estimator?
2. Define the term Unbiasedness.
3. Give the statement of Invariance Property of Consistent Estimator.
4. Give the statement of Cramer-Rao Inequality.
5. Define the term MVUE.
6. Define the term MVBE.
7. Write any four Methods of Estimation.

PART-B

II. Answer any Two of the following questions.

2×5=10

8. Show that $\sum x_i(\sum x_i - 1)/n(n-1)$ is an unbiased estimate of θ^2 , for the sample $x_1, x_2, \dots, x_n$ drawn on X which takes the values 1 or 0 with respective probabilities θ (1- θ).
9. State and prove Invariance Property of Consistent Estimator.
10. Find the MLE of θ for the following function
 $f(x, \theta) = (e^{-\theta} \theta^x) / x!$

PART-C

III. Answer any One of the following questions.

1×10=10

11. State and Prove Neymann-Factorization theorem.
12. X_1, X_2 and X_3 is a random sample of size 3 from a population with mean value μ and variance σ^2 .
 T_1, T_2, T_3 are the estimators used to estimate mean value,
where $T_1 = X_1 + X_2 - X_3$, $T_2 = 2X_1 + 3X_3 - 4X_2$ and $T_3 = (\lambda X_1 + X_2 + X_3)$.
 - i. Are T_1 & T_2 unbiased estimators?
 - ii. Find the value of λ such that T_3 is unbiased estimator for μ .
 - iii. With this value of λ is T_3 a consistent estimator?
 - iv. Which is the best estimator?
13. Suppose $x_1, x_2, \dots, x_n$ are independent observations from a Normal distribution
 - i. Find MLE μ of when σ^2 is known.
 - ii. Find MLE σ^2 of when μ is known.

BLDEA's
S.B. Arts and K.C.P. Science College, Vijaypur
Department of Statistics
First Internal Assessment 2022-23

Subject: Design of Experiments (P-I)
Time: 1 Hour

Semester: BSc-VI Sem
Max. Marks: 20

PART-A

IV. Answer any Three of the following questions.

3×2=6

1. Define the term "ANOVA".
2. Write the linear mathematical model for two-way classified data with interaction.
3. Write assumptions for three-way classified data.
4. Define the terms (i) Experiment (ii) Treatment.
5. Define the terms (i) Block (ii) Replication.
6. What are the Principles of Designs?

PART-B

V. Answer any One of the following questions.

1×5=5

7. Derive Statistical analysis for one-way classified data.
8. Write the Principles of Designs and explain any one of them.

PART-C

VI. Answer any One of the following questions.

1×9=9

9. Obtain the expectation of various sum of squares involving in two-way classified data.
10. Derive the statistical analysis for RBD.

BLDEA'S
S.B.ARTS AND KCP SCIENCE COLLEGE, VIJAYAPUR
DEPARTMENT OF STATISTICS
FIRST INTERNAL ASSESSMENT TEST 2022-23

SUBJECT: OPERATIONS RESEARCH-I

DATE: 11/07/2023

SEMESTER: B.Sc- VI (S2)

Max.Marks:20

Time : 1 Hr

SECTION-A

Q- I. Answer any THREE of the following questions.

3X 2 = 6

1. Define operation Research.
2. Write two characteristics of OR.
3. Define basic feasible solution (BFS).
4. Define slack and surplus variable.

SECTION-B

Q- II. Answer any ONE of the following questions.

1 X 5 = 5

5. Solve the following LPP by graphically

$$\text{Min } Z = 3X_1 + 5X_2$$

$$\text{S.t } X_1 + X_2 \leq 1500, X_2 \leq 600 \quad X_1, X_2 \geq 0$$

6. Solve the following LPP by graphically

$$\text{Max } Z = 3X_1 + 10X_2$$

$$\text{S.t } X_1 + X_2 \leq 4, 2X_1 + X_2 \leq 6, \quad X_1, X_2 \geq 0$$

SECTION-C

Q- III. Answer any ONE of the following questions.

1X 9 = 9

11. Write down the steps solving simplex algorithm.
12. Solve the LPP by simplex method

$$\text{Max } Z = 40X_1 + 35X_2$$

$$\text{S.t } 2X_1 + 3X_2 \leq 60, 4X_1 + 3X_2 \leq 96, \quad X_1, X_2 \geq 0$$

BLDEA's
SB ARTS AND KCP SCIENCE COLLEGE, VIJAYAPUR
FIRST INTERNAL ASSESMENT TEST 2023
BA VI SEM P-I APPLIED STATISTICS

TIME: 1 HOURS

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MAX.MARKS:20

ಪ್ರ - 1 ಬೇಕಾದ ಮೂರಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.

1. ಒಂದು-ದಿನ ವರ್ಗೀಕೃತ ನ್ಯಾಸ ಎಂದರೇನು?
2. ದ್ವಿ-ದಿನ ವರ್ಗೀಕೃತ ನ್ಯಾಸದ ಪ್ರಾಕಲ್ಪನೆಯನ್ನು ಬರೆಯಿರಿ.
3. ವಿಚಲನಾ - ವಿಶ್ಲೇಷಣೆಯ ಮೂಲ ಉದ್ದೇಶವನ್ನು ಬರೆಯಿರಿ.
4. ಆಕಸ್ಮಿಕ ಕಾರಣಗಳನ್ನು ವ್ಯಾಖ್ಯಾನಿಸಿರಿ.
5. $TSS = 105.25$ ಮತ್ತು $SST = 55.5$ ನೀಡಿದ್ದು, SSE ಯನ್ನು ಲೆಕ್ಕ ಮಾಡಿರಿ.

3 X 2 = 6

ವಿಭಾಗ - ಬ

ಪ್ರ - 2 ಬೇಕಾದ ಒಂದಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.

1 X 5 = 5

6. ANOVA ಎಂದರೇನು? ಅದರ ಮುಖ್ಯ ಗುರಿಗಳನ್ನು ತಿಳಿಸಿರಿ.
7. ಒಂದು-ದಿನ ವರ್ಗೀಕೃತ ನ್ಯಾಸದ ಪ್ರಾಕಲ್ಪನೆ, ಗಣಿತ ಮಾದರಿ ಮತ್ತು ಉದ್ದೇಶವನ್ನು ಬರೆಯಿರಿ.
8. ಕೆಳಗಿನ ಸಾರಾಂಶವನ್ನು ಪೂರ್ಣಗೊಳಿಸಿರಿ ಹಾಗೂ ನಿಮ್ಮ ನಿರ್ಣಯವನ್ನು ಹೇಳಿರಿ:

ವಿಚಲನೆಯ ಮೂಲ	ಸ್ವತಂತ್ರಾಂಕ	ವರ್ಗಗಳ ಮೊತ್ತ	ಸರಾಸರಿ ವರ್ಗಗಳ ಮೊತ್ತ	ಲೆಕ್ಕಾಚಾರದ	ಬೇಬಲ್
ಸಾಲುಗಳು	2	—	12.5	—	—
ವಿಭಾಗ	6	36	—	—	—
ಒಟ್ಟು	8	61	—	—	—

ವಿಭಾಗ - ಕ

ಪ್ರ - 3 ಬೇಕಾದ ಒಂದಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.

1 X 9 = 9

9. ಕೆಳಗಿನ ನ್ಯಾಸವನ್ನು ವಿಶ್ಲೇಷಿಸಿರಿ ಮತ್ತು ನಿಮ್ಮ ನಿರ್ಣಯವನ್ನು ತಿಳಿಸಿರಿ.

ತಳಿಗಳು	ವಿಶ್ಲೇಷಣೆಗಳು			
A:	10	15	13	12
B:	16	18	16	15
C:	13	15	17	16

10. ೧೬ ಪ್ಲಾಟ್‌ಗಳಲ್ಲಿ ಬಿತ್ತಿದ 4 ತರಹದ ಗೋದಿ ಬೆಳೆಯ ಮೇಲೆ ಸಂಪೂರ್ಣ ಆಕಸ್ಮಿಕ ಪ್ರಯೋಗವನ್ನು ಮಾಡಲಾಗಿದೆ. ಪ್ರತಿ ಪ್ಲಾಟ್‌ನ ಇಳುವರಿಯನ್ನು ಕೆಳಗೆ ಕೊಡಲಾಗಿದೆ. ಅಭಿಕಲ್ಪವನ್ನು ವಿಶ್ಲೇಷಿಸಿರಿ.

A28	B35	C27	D40
A30	B38	B25	D36
D35	C36	A32	C28
A36	B33	D28	B28

BLDEA's
SB ARTS AND KCP SCIENCE COLLEGE, VIJAYAPUR
FIRST INTERNAL ASSESMENT TEST 2023
BA VI SEM P-II APPLIED STATISTICS

TIME : 1 HOURS

ವಿಭಾಗ - ಅ

MAX.MARKS:20

ಪ್ರ - 1 ಬೇಕಾದ ಮೂರಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.

3 X 2 = 6

1. ಕಾರ್ಯಾಚರಣೆ ಪರಿಶೋಧನೆಯ ಬೇಕಾದ ಎರಡು ಮಿತಿಗಳನ್ನು ಬರೆಯಿರಿ.
2. L.P.P ಎಂದರೇನು ?
3. ಲಕ್ಷ್ಯ ಫಲನೆ ಎಂದರೇನು?
4. ಮೂಲಭೂತವಾದ ಸೂಕ್ತ ಪರಿಹಾರದ ವ್ಯಾಖ್ಯೆ ಕೊಡಿ.
5. ಸಾಗಾಣಿಕ ಸಮಸ್ಯೆ ಎಂದರೇನು?
6. ಸಮತುಲಿತ ಸಾಗಾಣಿಕ ಸಮಸ್ಯೆ ಎಂದರೇನು?

ವಿಭಾಗ - ಬ

ಪ್ರ -2 ಬೇಕಾದ ಬೇಕಾದ ಒಂದಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.ಉತ್ತರಿಸಿರಿ.

1 X 5 = 5

7. ಕಾರ್ಯಾಚರಣೆಯ ಪರಿಶೋಧನೆಯ ಅರ್ಥ ಮತ್ತು ಐತಿಹಾಸಿಕ ಹಿನ್ನೆಲೆಯನ್ನು ಬರೆಯಿರಿ.
8. ಕೆಳಗಿನ L.P.P ಯನ್ನು ರೇಖಾಚಿತ್ರದಿಂದ ಜಡಿಸಿರಿ.

$$\text{ಗರಿಷ್ಠಗುಣಕ } Z = 10x_1 + 5x_2$$

$$\text{ನಿಬಂಧನೆಗಳು } 2x_1 + 4x_2 \geq 20$$

$$x_1 + 2x_2 \leq 30$$

$$x_1, x_2 \geq 0$$

ವಿಭಾಗ - ಕ

ಪ್ರ -3 ಬೇಕಾದ ಬೇಕಾದ ಒಂದಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.ಉತ್ತರಿಸಿರಿ.

1 X 9 = 9

9. ಕೆಳಗಿನ L.P.P ಯನ್ನು ರೇಖಾಚಿತ್ರ ವಿಧಾನದಿಂದ ಬಿಡಿಸಿರಿ.

$$\text{ಗರಿಷ್ಠೀಕರಿಸಿ } Z = 4x_1 + 5x_2$$

$$\text{ನಿಬಂಧನೆಗಳು } x_1 + 3x_2 < 15$$

$$3x_1 + x_2 < 21$$

$$x_1, x_2 < 0$$

10. ಕೆಳಗಿನ ಸಾಗಾಣಿಕ ಸಮಸ್ಯೆಯನ್ನು NWCR ಪದ್ಧತಿಯಿಂದ ಬಿಡಿಸಿರಿ.

ಸೇರಬೇಕಾದ ಸ್ಥಳಗಳು

ಮೂಲಗಳು	D ₁	D ₂	D ₃	D ₄	ಲಭ್ಯತೆ
O ₁	19	30	50	10	7
O ₂	21	30	40	60	9
O ₃	40	8	70	20	18
ಬೇಡಿಕೆ	5	8	7	14	34

BLDEA'S
S.B.ARTS AND KCP SCIENCE COLLEGE, VIJAYAPUR
DEPARTMENT OF STATISTICS
SECOND INTERNAL ASSESSMENT TEST 2022-23

SUBJECT: PROBABILITY AND DISTRIBUTIONS

DATE: 23/08/2023

SEMESTER: B.Sc- II

Max.Marks:30

Time : 1 Hr

SECTION-A

Q- I. Answer any FIVE of the following questions.

5 X 2 = 10

1. Define Bernoulli distribution.
2. Write the recurrence relation of Poisson distribution.
3. Write the uses of MGF.
4. Mentions the conditions which shows probability distribution is limiting form of BD..
5. Define Normal distribution.
6. What is R.

SECTION-B

Q- II. Answer any TWO of the following questions.

2 X 5 = 10

7. State and prove total probability rule..
8. Obtain MGF of BD
9. State the properties of Normal distribution.
10. Derive the pmf of BD.

SECTION-C

Q- III. Answer any ONE of the following questions.

1X 10 = 10

11. Derive the pmf of Poisson distribution and find its mean and variance.
12. State and prove recurrence relation in moments for BD

$$\mu_{r+1} = pq \frac{d\mu}{dp} + nr\mu_{r-1}$$

BLDEA's
S.B. Arts and K.C.P. Science College, Vijayapur
Department of Statistics
Second Internal Assessment 2022-23

Subject: Statistical inference-I

Semester: BSc-IV

Time:1 Hour

Max.Marks:30

PART-A

I. Answer any Five of the following questions. 5×2=10

1. Define the terms (i) Null hypothesis (ii) Alternative hypothesis
2. Define (i) Type-I Error (ii) Type-II Error
3. Define MP test.
4. Give the statement of NP Lemma.
5. Define Interval Estimation.
6. Define (i) Confidence coefficient (ii) Confidence Interval.
7. Write down the CI for population mean for large samples.

PART-B

II. Answer any Two of the following questions. 2×5=10

8. Given the frequency function,

$$f(x, \theta) = 1/\theta, \text{ if } 0 \leq x \leq \theta$$
$$= 0, \text{ otherwise}$$

And that you are testing null hypothesis $H_0: \theta=1$ against alternative hypothesis $H_1: \theta=2$ by means of single observed value of x . What would be the sizes of Type-I error and Type-II error? Take the interval $0.5 \leq x$.

9. Find BCR for Poisson Distribution.
10. Compute $100(1-\alpha)\%$ CI for single mean.
11. Compute $100(1-\alpha)\%$ CI for single proportion.

PART-C

III. Answer any One of the following questions. 1×10=10

12. Find BCR for following random sample of size 'n' drawn from a Binomial distribution with parameter p of size α for testing $H_0: p=p_0$ against $H_1: p=p_1$.
13. Compute $100(1-\alpha)\%$ CI for difference between two means.

BLDEA's
S.B. Arts and K.C.P. Science College, Vijayapur
Department of Statistics

Second Internal Assessment 2022-23

Subject: Design of Experiments (P-I)

Semester: BSc-VI

Time:1 Hour

Max.Marks:20

PART-A

I. Answer any Three of the following questions. 3×2=6

1. Write the layout of LSD with 5 treatments.
2. Write the linear mathematical model for LSD.
3. Define contrast and orthogonal contrast.
4. Define confounding.
5. Define Split-Plot design.
6. Write the linear mathematical model for Split-Plot design.

PART-B

II. Answer any One of the following questions. 1×5=5

7. Obtain the expression for one-value is missing in LSD.
8. Obtain the statistical analysis of 2^2 -Factorial Experiment.
9. Give the ANOVA table for a Split-Plot design with two factors.

PART-C

III. Answer any One of the following questions. 1×9=9

10. Define LSD. Obtain the expression for relative efficiency of LSD over RBD.
11. Explain the statistical analysis of 2^3 -Factorial experiment design.

BLDEA'S
S.B.ARTS AND KCP SCIENCE COLLEGE, VIJAYAPUR
DEPARTMENT OF STATISTICS
SECOND INTERNAL ASSESSMENT TEST 2022-23

SUBJECT: OPERATIONS RESEARCH-I

DATE: 23/08/2023

SEMESTER: B.Sc- VI (S2)

Max.Marks:20

Time : 1 Hr

SECTION-A

Q- I. Answer any THREE of the following questions.

3 X 2 = 6

1. What do you mean by non degeneracy in TP.
2. Mention the types of TP.
3. How do you convert unbalanced assignment problem to balanced assignment problem..
4. Distinguish between TP and AP.

SECTION-B

Q- II. Answer any ONE of the following questions.

1 X 5 = 5

5. Explain North-West corner Rule method for finding feasible solution to a transportation problem
6. Obtain an IBFS by matrix minima method for the following data.

Origins	Destinations				Availability
	D ₁	D ₂	D ₃	D ₄	
O ₁	15	14	18	15	300
O ₂	17	19	15	10	250
O ₃	21	25	14	11	150
Requirement	100	200	150	250	

SECTION-C

Q- III. Answer any ONE of the following questions.

1 X 9 = 9

11. Explain Modi method of finding optimum solution to a transportation problem.
12. Solve the following assignment problem

Machine	Job				
	I	II	III	IV	V
M ₁	7	5	9	8	11
M ₂	9	12	7	11	10
M ₃	8	5	4	6	9
M ₄	7	3	6	9	5
M ₅	4	6	7	5	11

ವಿಭಾಗ - ಅ

ಪ್ರ-1 ಬೇಕಾದ ಮೂರಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.

1. ಪ್ರಯೋಗಗಳ ಅಭಿಕಲ್ಪ ಎಂದರೇನು?
2. ಇಳುವರಿ ಎಂದರೇನು?
3. ಅಭಿಕಲ್ಪದ ದಕ್ಷತೆ ಎಂದರೇನು?
4. ಪುನರಾವರ್ತನೆ ಎಂದರೇನು?
5. ಸಂಪೂರ್ಣ ಆಕಸ್ಮಿಕ ಅಭಿಕಲ್ಪ ಎಂದರೇನು?

3 X 2 = 6

ವಿಭಾಗ - ಬ

ಪ್ರ-2 ಬೇಕಾದ ಒಂದಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.

1 X 5 = 5

6. ಪ್ರಯೋಗಗಳ ಅಭಿಕಲ್ಪದ ಮೂಲತತ್ವಗಳನ್ನು ಹೇಳಿ, ಬೇಕಾದ ಒಂದನ್ನು ವಿವರಿಸಿರಿ.
7. ಕೆಳಗಿನ C.R.D. ಯನ್ನು ವಿಶ್ಲೇಷಿಸಿರಿ.

ಚಿಕಿತ್ಸೆಗಳು:

A:	18	15	17	
B:	17	14	16	
C:	16	13	15	14

8. ಕೆಳಗಿನ R.B.D. ಯನ್ನು ವಿಶ್ಲೇಷಿಸಿರಿ.

ಖಂಡಗಳು

I	II	III	IV
A ₈	C ₁₀	A ₆	A ₈
C ₁₂	B ₈	B ₉	A ₈
B ₁₀	A ₈	C ₁₀	C ₉

ವಿಭಾಗ - ಕ

ಪ್ರ-3 ಬೇಕಾದ ಒಂದಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.

1 X 9 = 9

9. ಕೆಳಗಿನ R.B.D ಯನ್ನು ವಿಶ್ಲೇಷಿಸಿರಿ ಮತ್ತು ವಿಮರ್ಶಿಸಿರಿ:

ಖಂಡಗಳು	I	A9	B8	C7
	II	C7	A6	B12
	III	A13	C12	B13
	IV	C8	B10	A9

10. ಕೆಳಗಿನ LSD ಯನ್ನು ವಿಶ್ಲೇಷಿಸಿರಿ ಮತ್ತು ವಿಮರ್ಶಿಸಿರಿ:

ಖಂಡಗಳು	A3	B2	C1
	C1	A4	B3
	A5	C2	B4
	C3	B5	A3

CLASS: BA VI SEM P-II
TIME: 1 HOURS

BLDEA's
SB ARTS AND KCP SCIENCE COLLEGE, VIJAYAPUR
SECOND INTERNAL ASSESMENT TEST 2023
APPLIED STATISTICS

DATE: 28/08/2023
MAX.MARKS:20

ವಿಭಾಗ-ಅ

ಪ್ರ-1 ಬೇಕಾದ ಮೂರಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.

1. ನಿಯೋಜನಾ ಸಮಸ್ಯೆ ಎಂದರೇನು?
2. ನಿಯೋಜನಾ ಸಮಸ್ಯೆಯ L.P.P ಯ ಒಂದು ಪ್ರಕಾರವೇ?
3. ಅವನತಿ ಹೊಂದದ ಮೂಲಭೂತವಾದ ಸೂಕ್ತ ಪರಿಹರ ವ್ಯಾಖ್ಯೆ ಕೊಡಿರಿ.
4. ಕ್ರೀಡೆಯ ವ್ಯಾಖ್ಯೆ ಕೊಡಿರಿ.
5. ಇಬ್ಬರು ವ್ಯಕ್ತಿಗಳ ಶೂನ್ಯ ಮೊತ್ತದ ಕ್ರೀಡೆಯಲ್ಲಿ, ಕ್ರೀಡೆಯ ಮಾಲ್ಯ-12 ಆಗಿದ್ದರೇ, ಅದು ನಿಸ್ಪಕ್ಷಪಾತ ಕ್ರೀಡೆ ಆಗುತ್ತದೆಯೇ?

$$3 \times 2 = 6$$

ವಿಭಾಗ - ಬ

ಪ್ರ-2 ಬೇಕಾದ ಒಂದಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.

$$1 \times 5 = 5$$

6. ಕೆಳಗಿನ ನಿಯೋಜನಾ ಸಮಸ್ಯೆಯನ್ನು ಬಿಡಿಸಿರಿ.

ಕೆಲಸಗಳು

ಕೆಲಸಗಾರರು	I	II	III	IV
A	5	23	14	8
B	10	8	1	23
C	35	16	11	12
D	16	23	21	7

7. ಕೆಳಗಿನ ಕ್ರೀಡೆಯನ್ನು ಬಿಡಿಸಿರಿ. ಅದು ನಿಸ್ಪಕ್ಷಪಾತ ಕ್ರೀಡೆ ಆಗುತ್ತದೆಯೇ

ಆಟಗಾರ B

		B1	B2	B3	B4
ಆಟಗಾರ A	A1	20	15	12	35
	A2	25	14	8	10
	A3	-5	4	11	0
	A4				

ವಿಭಾಗ - ಕ

ಪ್ರ-3 ಬೇಕಾದ ಒಂದಕ್ಕೆ ಉತ್ತರಿಸಿರಿ.

$$1 \times 9 = 9$$

9. ಕೆಳಗಿನ ನಿಯೋಜನಾ ಸಮಸ್ಯೆಯನ್ನು ಬಿಡಿಸಿರಿ.

ಯಂತ್ರಗಳು

ಕೆಲಸಗಳು	I	II	III	IV
A	8	26	17	11
B	13	4	28	26
C	38	19	18	15
D	19	26	24	10

10. ಕೆಳಗಿನ ಕ್ರೀಡೆಯನ್ನು ಬಿಡಿಸಿರಿ. ಅದು ನಿಸ್ಪಕ್ಷಪಾತ ಕ್ರೀಡೆ ಆಗುತ್ತದೆಯೇ

ಆಟಗಾರ B

		B1	B2	B3	B4
ಆಟಗಾರ A	A1	-7	0	3	-5
	A2	7	-2	0	-4
	A3	-2	-1	-2	0
	A4	4	2	3	6
