

Reg. No. :

Name :

First Semester B.Sc. Degree Examination, March 2023

First Degree Programme under CBCSS

Statistics

Core Course I

ST 1141 : STATISTICAL METHODS I

(2018-2021 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer all questions. Each question carries 1 mark.

1. Give any definition of Statistics.
2. Name some area of applications of Statistics in the present scenario.
3. Which diagram is used for representing net quantities?
4. What are Ogives?
5. Which are the measures of central tendency?
6. What percentage of observations is between first and fourth decile?
7. Define dispersion.
8. Give the relationship between range and S.D.

P.T.O.

9. Define moments of a distribution.
10. What do you mean by a mesokurtic curve?

(10 × 1 = 10 Marks)

SECTION – B

Answer any eight questions. Each question carries 2 marks.

11. Distinguish between a questionnaire and a schedule.
12. How do you construct a frequency table?
13. Draw a histogram for the following data and hence find the mode:
- | | | | | |
|-----------------|-----|-----|-----|-----|
| Marks obtained | <10 | <20 | <30 | <40 |
| No. of students | 2 | 4 | 9 | 7 |
14. What are pictograms and cartograms? Give examples of each.
15. What are the desirable properties of a good measure of central tendency?
16. Find the median and mode of 4, 10, 7, 15, 7, 3, 5, 3, 7.
17. Define weighted arithmetic mean.
18. Define CV. What are its uses?
19. What are the merits and demerits of Median?
20. Can you ascertain the nature of skewness from the sign of the moment measure β_1 ?
21. Distinguish between skewness and kurtosis based on a Normal curve.
22. What are the different types of classification of data?

(8 × 2 = 16 Marks)

SECTION - C

Answer any **six** questions. Each question carries **4** marks.

23. What are the important points to be remembered in properly designing a questionnaire?
24. Distinguish between primary and secondary data. What are the sources of a secondary data?
25. A sample of size 20 has mean = 85. But it was found later that two observations were wrongly read as 75 and 70 instead of 57 and 60. Find the corrected mean group.
26. Find the G.M if the A.M = 9 and H.M = 4 of a data. What are the uses of G.M?
27. What are the merits and demerits of Mean Deviation?
28. What is the effect of change in scale and origin for S.D?
29. The first four moments of a distribution about 4 are -1.5 , 17 , -30 and 108 . Find the first four central moments and mean of the distribution.
30. Why do we go for a Sheppard's correction for the moments of grouped data? Give the Sheppard's correction for the first 4 central moments.
31. Explain symmetry of a distribution based on its characteristics.

(6 × 4 = 24 Marks)

SECTION - D

Answer any **two** questions. Each question carries **15** marks.

32. (a) What are the important graphical representations of a data?
- (b) The following data gives the marks of a group of students for their external examination. Draw the ogives and hence find the median of the distribution.

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	4	16	15	20	10	5

33. (a) What are the merits and demerits of A.M?

(b) A distribution consists of four parts characterized as following. Find the mean and the standard deviation of the combined group.

Parts	No. of items	AM	SD
1	50	61	8
2	100	70	9
3	120	80	10
4	30	83	11

34. (a) Show that mean deviation is minimum when deviations are taken from the median.

(b) The following data gives the frequency distribution of the wages of 72 labours in a factory. Find the M.D about the mean and compute the coefficient of M.D.

Wages:	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50
Labours:	2	22	19	14	3	4	6	1	1

35. (a) Write the coefficients of Skewness and Kurtosis based on the moments and their range of variations.

(b) The following data relates to the number of assistants in 50 retail establishments. Calculate the moment coefficient of skewness and kurtosis and comment on the nature of the distribution.

No. of Assistants	0	1	2	3	4	5	6	7	8	9
Frequency	3	4	6	7	10	6	5	5	3	1

(2 × 15 = 30 Marks)

(Pages : 4)

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First Degree Programme Under CBCSS

Statistics

Core Course I

ST 1141 : STATISTICAL METHODS – I

(2022 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer all questions. Each question carries 1 mark.

1. Give briefly the characteristics of a good questionnaire.
2. Name two fields where statistics is inevitable.
3. Define line diagram.
4. Define bar diagram.
5. If the sum of N observations is 630 and their mean is 42, then the value of N is _____.
6. Define weighted mean.
7. Define quartile deviation.
8. Write any two properties of standard deviation.

P.T.O.

9. A distribution that is more peaked than normal is called _____.
10. Define r^{th} central moment for a frequency distribution.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Each question carries **2** marks.

11. Describe the limitations and misuses of statistics.
12. What are the sources of secondary data?
13. Write a note on histogram.
14. Define pictogram.
15. Define percentiles.
16. Write empirical relationship between mean, median and mode.
17. State the desirable properties of a good average.
18. Define range. What are its merits and demerits?
19. Define mean deviation.
20. Explain the relationship between raw and central moment.
21. The first three moments of a distribution about the value four of the variable are :
-1.5, 17, -30. Find variance and skewness.
22. Explain Sheppard's correction for moments for grouped data.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each question carries **4** marks.

23. Explain nominal, ordinal, interval and ratio scales with examples.
24. Distinguish between primary and secondary data.
25. How do you represent a frequency distribution graphically?
26. Define arithmetic mean and explain three properties of arithmetic mean.
27. Let the average mark of 40 students of class A be 38, the average mark of 60 students of another class B is 42. What is the average mark of the combined group of 100 students?
28. Explain median for discrete and continuous frequency distribution.
29. Explain dispersion and write characteristics for an ideal measure of dispersion.
30. For the following data calculate mean deviation about mean of 8, 24, 12, 16, 10, 20.
31. Define skewness and describe Kelly's measures of skewness.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Each question carries **15** marks.

32. (a) Define tabulation, explain different type of tables.
(b) Explain the different types of classifications of data with examples.
33. (a) Explain graphical representation of frequency distribution by frequency curve and ogive curve.
(b) Explain geometric mean and harmonic mean.

34. (a) Explain the different measures of dispersions.
- (b) Describe coefficient of variation as a measure of relative measure of dispersion.
35. (a) Explain Karl Pearson's and Bowley's measures of skewness.
- (b) Calculate standard deviation of 23, 25, 28, 31, 38, 40.

(2 × 15 = 30 Marks)

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Reg. No. :

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First Semester B.Sc. Degree Examination, March 2023

First Degree Programme under CBCSS

Statistics

Complementary Course for Mathematics

ST 1131.1 : DESCRIPTIVE STATISTICS

(2018-2021 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION A

Answer **all** questions. Each question carries **1** mark.

1. Name the two kinds of statistical data and mention the sources of them.
2. What is meant by tabulation of data?
3. Explain the advantages of diagrammatic representation of data.
4. What are the important graphic presentations of statistical data?
5. Define population and sample.
6. Define central tendency.
7. Which measure of dispersion do you think most important? Justify.

8. What do you mean by the moments of a data set?
9. Define scatter diagrams.
10. What do you mean by correlation?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Each question carries **2** marks.

11. What are the important types of classification of a data?
12. Discuss the advantages of sampling over census.
13. Distinguish between probability sampling and non-probability sampling.
14. Define stratified random sampling.
15. What do you mean by relative and cumulative frequency distributions?
16. What are the important measures of central tendency?
17. What are the merits and demerits of Arithmetic mean?
18. What are the desirable properties of a good measure of dispersion?
19. Define coefficient of variation.
20. Define skewness of a data.
21. What do you mean by curve fitting?
22. Define regression analysis.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each question carries **4** marks.

23. What are the points to be remembered while preparing a questionnaire?
24. Define simple random sample. Explain any method of selecting a simple random sample.
25. Establish the relationship between A.M, G.M and H.M.
26. Prove that S.D cannot be less than the M.D from the mean.
27. If the first four moments of a distribution about 4 are 1,4,10 and 45, find the mean and the first four central moments.
28. Define kurtosis. What are the important measures of kurtosis?
29. Explain the principle of least squares in curve fitting to fit $y = ab^x$.
30. Why there are two regression lines while analysing a bivariate data? When do they coincide?
31. Define the Karl Pearson's coefficient of correlation. What does it indicate when the value of this coefficient is zero?

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** question carries **15** marks.

32. (a) Describe the construction of a Pie chart to a data.
- (b) Draw an ogive and hence find the median from the data of marks of 140 students

Marks	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
No.of studnets	7	15	18	25	30	20	16	7	2

33. (a) The following data gives the frequency distribution of the wages of 72 labours in a factory. Find the mean deviation about the mean and the coefficient of M.D.

Wage :	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50
Labours:	2	22	19	14	3	4	6	1	1

- (b) Calculate the quartile deviation for the following data of annual income of families in thousands of rupees.

Income :	<499	500-999	1000-1999	2000-2999	>3000
No.of families :	5	25	40	20	10

34. (a) Find the correlation coefficient between X and Y from the following data.

X: 2 3 4 5 6 7 8

Y: 4 5 6 8 9 7 10

- (b) What are the different types of correlation? Discuss the Spearman's coefficient of correlation.
35. (a) In a bivariate study the lines of regression of Y on X and that of X on Y are given. Write the procedure to identify them.
- (b) To study the effect of rain on yield of wheat, the following results were obtained. Estimate the yield when the rainfall is 80 inches.

	Mean	S.D
Yield in pounds :	800	12
Rainfall in inches :	50	2

The correlation co-efficient $r = 0.80$

(2 × 15 = 30 Marks)

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First Semester B.Sc. Degree Examination, March 2023

First Degree Programme under CBCSS

Statistics

Complementary Course for Mathematics

ST 1131.1 – DESCRIPTIVE STATISTICS AND BIVARIATE ANALYSIS

(2022 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer all questions. Each question carries 1 mark.

1. What is a questionnaire?
2. Define nominal scale with an example.
3. If the sum of N observations is 630 and their mean is 42, find the value of N.
4. Define harmonic mean.
5. Mean deviation is minimum when deviations are taken from
6. Define skewness.
7. What is scatter diagram?
8. What is the principle of least squares?
9. What is the relation between the correlation coefficient and the regression coefficients?
10. Interpret the value of 0 for the product moment correlation coefficient.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Each question carries **2** marks.

11. Distinguish between census and sampling.
12. Define systematic sampling.
13. What is classification and tabulation of data?
14. Show that $A.M \geq G.M. \geq H. M$ for any data set.
15. In a moderately asymmetrical distribution median is 41.6, mode is 48.4. Find mean.
16. Show that standard deviation is not affected by change of origin.
17. If the coefficient of variation of a distribution is 50 and its variance is 400. What will be the value of arithmetic mean?
18. Write the normal equations required for fitting of a straight-line $y = ax + b$.
19. Write the relationship between first four central moments in terms of raw moments.
20. Define coefficient of determination.
21. The correlation coefficient between two variables X and Y is $r = 0.60$. If the means and standard deviations of X and Y are 10, 20, 1.50 and 2.00 respectively, find the regression equation of Y on X .
22. Distinguish between positive and negative correlation.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each question carries **4** marks.

23. Distinguish between sampling and non-sampling errors.
24. Explain simple random sampling with replacement and without replacement

25. Calculate the geometric mean for the following data.

Class :	1-3	4-6	7-9	10-12
Frequency :	8	16	15	3

26. Calculate mean deviation about mean of 8, 24, 12, 16, 10, 20.

27. The mean marks of 80 students of a class are 65. The mean marks of boys are 70 and that of girls is 62. Find the number of girls in the class.

28. Find the first, second and third moments about the origin for the set of numbers 1, 3, 5, 7.

29. Explain the least square method of fitting of a parabola.

30. Calculate the rank correlation coefficient from the following data specifying the ranks of 7 students in two subjects.

Rank in 1 st subject :	1	2	3	4	5	6	7
Rank in 2 nd subject :	4	3	1	2	6	5	7

31. Show that correlation coefficient is independent of change of origin and scale.
(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Each question carries **15** marks.

32. Calculate mean, median and mode for the following data.

Class :	0-10	10-20	20-30	30-40	40-50	50-60
Frequency :	5	15	40	32	20	8

33. Calculate Karl Pearson's coefficient of skewness for the following frequency distribution.

Class :	65-69	70-74	75-79	80-84	85-89	90-94	95-99	100-104
Frequency :	8	15	18	25	14	9	6	5

34. Fit an equation of the form $y = ab^x$ to the following data.

x:	0	1	2	3	4	5	6
y:	32	47	65	92	132	190	275

Estimate y when $x = 8$.

35. The following are the data on the average height of the plants and weight of yield per plot recorded from 10 plots of rice crop.

Height (X):	28	26	32	31	37	29	36	34	39	40
Yield (Y):	75	74	82	81	90	80	88	85	92	95

Find :

- correlation coefficient between X and Y
- the regression coefficients and hence write down the regression equations and
- probable value of the yield of a plot having an average plant of height of 98 cm.

(2 × 15 = 30 Marks)

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First Semester B.Sc Degree Examination, March 2023

First Degree Programme under CBCSS

Statistics

Complementary Course for Physics

ST 1131.2 : DESCRIPTIVE STATISTICS

(2022 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer all questions. Each question carries 1 mark.

1. Define histogram.
2. What is the point of intersection of two cumulative frequency curves?
3. If for values of x , $A.M = 25$ and $H.M = 9$, then find the $G.M$.
4. Define range.
5. What is Kurtosis?
6. Define central moments.
7. What is scatter diagram?
8. What is the method used for fitting curve?

9. Interpret the value of 0 for the product moment correlation coefficient.
10. What do you mean by negative correlation?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Each question carries **2** marks.

11. What are different sources of primary data?
12. Distinguish between frequency and cumulative frequency.
13. Three samples of sizes 45, 40 and 65 having means 2, 2.5 and 2 respectively were combined. Find the mean of the combined group.
14. The average of 7 numbers 7, 9, 12, x, 5, 4, 11 is 9. Find the missing value x.
15. A train covered the first 5 km of its journey at a speed of 30 km/hr and the next 15 kms at a speed of 45km/hr. Find the average speed of the train.
16. Define coefficient of variation. What is its significance?
17. Differentiate leptokurtic and mesokurtic curve.
18. What do you mean by curve fitting?
19. Write down the normal equation for fitting an exponential curve $y = ab^x$
20. State the invariance property of correlation coefficient.
21. Why there are two regression lines?
22. Given the two lines of regression as $3X - 4Y + 8 = 0$ and $4X - 3Y = 1$ Find the means of X and Y.

(8 × 2 = 16 Marks)

SECTION – C

Answer any six questions. Each question carries 4 marks.

23. Draw less than ogive and more than ogive for the following data.

Class : 0-10 10-20 20-30 30-40 40-50 50-60 60-70

Frequency : 5 12 28 40 21 10 4

24. Calculate mean deviation about mean

Class : 0-10 10-20 20-30 30-40 40-50

Frequency : 5 15 17 11 2

25. Explain various types of classification.

26. The first three moments of a distribution about the value 1 are 2, 25 and 80. Find its mean, standard deviation and moment measure of skewness.

27. Fit a straight line for the following data.

x : 1 2 3 4 5

y : 14 13 4 5 2

28. Calculate the standard deviation of the following data.

Class interval : 0-5 5-10 10-15 15-20 20-25 25-30

Frequency : 4 8 14 6 3 1

29. Obtain the angle between two lines of regression.

30. For the regression lines $4x - 5y + 33 = 0$ and $20x - 9y = 107$, find (a) the mean values of x and y , (b) the coefficient of correlation between x and y and the variance of y given that the variance of x is 9.

31. Karl Pearson's coefficient of correlation between two variables X and Y is 0.28, their covariance is 7.6. If the variance of X is 9, find the standard deviation of Y .

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Each question carries **15** marks.

32. Calculate the arithmetic mean and median of the frequency distribution given below. Hence calculate the mode using the empirical relation.

Class :	130-134	135-139	140-144	145-149	150-154	155-159	160-164
Frequency :	5	15	28	24	17	10	1

33. Calculate Bowley's coefficient of skewness for the following data and comment on the result.

Class :	0-10	10-20	20-30	30-40	40-50
Frequency :	8	15	24	21	12

34. (a) Derive the expression for rank correlation coefficient.

- (b) Consider the following set of marks in two subjects scored by 10 students. Compute Spearman's rank correlation coefficient for the data.

Students	1	2	3	4	5	6	7	8	9	10
Subject x	88	72	95	60	35	46	52	58	30	67
Subject y	65	90	86	72	30	54	38	43	48	75

35. From the following data, find (a) the regression equations, (b) the coefficient of correlation and (c) most likely value of y when x = 30.

x: 25 28 35 32 31 36 29 38 34 32

y: 43 46 49 41 36 32 31 30 33 39

(2 × 15 = 30 Marks)

Reg. No. :

Name :

First Semester B.Sc. Degree Examination, March 2023

First Degree Programme under CBCSS

Statistics

Complementary Course for Psychology

ST 1131.5 : STATISTICS METHODS FOR PSYCHOLOGY – I

(2022 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries **1** mark.

1. Solve the value of x from the equation $3x + 4 = 8$.
2. What you mean by a linear equation?
3. List few sources of secondary data.
4. Define questionnaire.
5. Define cluster.
6. Describe any one non-probability sampling procedure.
7. Define classification.
8. Define a frequency distribution.

9. Differentiate one dimensional and two dimensional diagrams.
10. Name two important graphical representation of data.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Each question carries **2** marks.

11. Write a short note on limitations of statistics.
12. Distinguish between ordinal and nominal scale.
13. Distinguish between primary and secondary data.
14. Differentiate population and sample.
15. Distinguish between quantitative and qualitative data with suitable examples.
16. What to do to test reliability and validity of a questionnaire?
17. Differentiate probability and non-probability sampling techniques.
18. Define strata.
19. Differentiate grouped and ungrouped data.
20. What are the general rules of forming a frequency table?
21. Differentiate pictograms and cartograms.
22. Explain the advantages of pie-chart.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each question carries **4** marks.

23. Discuss the importance of statistics in psychology.
24. Distinguish between ratio and interval scale of measurements.

25. Solve $3x + 9y = 27$ and $4x + 3y = 12$.
26. Briefly explain the advantages of census method.
27. Differentiate sampling and non-sampling errors.
28. Define class limits, class marks and class boundaries.
29. Define frequency polygon. Construct an example.
30. What are ogives? Explain the method of drawing ogives.
31. Give a comparison between bar diagram and pie diagram.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Each question carries **15** marks.

32. Explain various methods of collecting primary data. Also explain the advantages and disadvantages of various methods.
33. Differentiate various probability sampling schemes and discuss its merits and demerits.
34. Explain various types of classification with the help of examples.
35. Draw histogram and ogives of the following frequency distribution and find the median from the graph.

Class :	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
Frequency :	5	10	18	26	22	15	4

(2 × 15 = 30 Marks)

Reg. No. :

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First Semester B.A. Degree Examination, March 2023

First Degree Programme under CBCSS

Statistics

Complementary Course for Economics

ST 1131.4 : STATISTICS I

(2017-2021 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries 1 mark.

1. Statistics which summarizes the characteristics of a data set are called _____
2. Which is the most commonly used non probability sampling technique in real situations?
3. Statistics deals with _____ characteristics.
4. What is the full form of CSO?
5. The agency for estimating the national income of India is _____.
6. Which is the suitable method for collecting primary data in cases where the informants are literate and spread over a vast area?
7. Data are classified on the basis of differences in time is called _____.

P.T.O.

8. The number of observations corresponding to a particular class in a frequency distribution is known as _____
9. Which diagram is more appropriate to represent quantitative information on a geographical basis?
10. The x-coordinate of the point of intersection of ogives gives _____.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Each question carries **2** marks.

11. What are the two ways in which statistics can be defined?
12. Write down any two sources of secondary data.
13. Define inferential statistics.
14. Write down the four divisions of NSSO.
15. Define census. What is its advantage?
16. Define standard error. What is its utility?
17. Point out the objectives of classification.
18. What are reference and summary tables?
19. What are open end classes? Give a practical situation where use of open end classes is inevitable.
20. What are less than and more than ogives?
21. Define frequency polygon. How is frequency polygon different from a frequency curve?
22. What are pictograms? What is their benefit?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each question carries **4** marks.

23. State the important functions of Statistics.
24. Explain briefly the application of Statistics in Economics.
25. Define questionnaire. What are the points would consider in drafting questionnaire?
26. Distinguish between sampling and non sampling errors. How these errors can be controlled in surveys?
27. Describe briefly the different types of classification
28. Draw a histogram for the following frequency distribution:

Variable	10-20	20-30	30-40	40-50	50-60
Frequency	15	23	34	30	18
29. What are the advantages of representing statistical data by diagrams and graphs?
30. Distinguish between subdivided and multiple bar diagrams
31. Write short notes on the objective of NSSO.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Each question carries **15** marks.

32. (a) Distinguish between primary and secondary data. Explain different methods of collecting primary data.
- (b) Describe briefly the role and main functions of CSO.

10 + 5 = 15

33. (a) Describe the advantages of sampling method over census
(b) Write short notes on (i) Simple random sampling, (ii) Stratified random sampling, and (iii) Systematic sampling. $6 + 9 = 15$

34. (a) Draw a pie diagram of the following data of public sector outlays:

Sector	Percentage outlays
Agricultural and Rural Development	12.9
Irrigation	12.5
Energy	27.2
Industry and Minerals	15.4
Transport Communication	15.9
Social Services	16.1

- (b) Draw a less than cumulative frequency curve for the following data:

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of Students	4	6	10	20	8	2

$$10 + 5 = 15$$

35. (a) What are the limitations of Statistics?
(b) Describe the basic principles for forming a grouped frequency distribution.
(c) Explain graphical location of partition values. $4 + 7 + 4 = 15$

$$(2 \times 15 = 30 \text{ Marks})$$

Reg. No. :

Name :

First Semester B.A. Degree Examination, March 2023

First Degree Programme under CBCSS

Statistics

Complementary Course for Economics

ST 1131.4 : STATISTICS I

(2022 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Very Short Answer. (One word to maximum two sentences) Answer all questions.
Each question carries 1 mark.

1. Describe what you mean by data.
2. Give the definition of statistics according to Prof. R.A.Fisher.
3. If the actual value of a unit is 420 and its estimated value is 410, what is the absolute error?
4. Give any one activity of National Statistical Office.
5. Define interval data.
6. Describe sample survey method.
7. Give any two methods of sampling.

P.T.O.

8. Define class interval.
9. Describe open end frequency distribution.
10. Give any two two-dimensional diagrams.

(10 × 1 = 10 Marks)

SECTION – B

Short Answer (Not to exceed one paragraph) (Answer any eight questions. Each question carries 2 marks).

11. Describe the role of inferential statistics.
12. What is qualitative classification?
13. What are the limitations of statistics?
14. What are the functions of MOSPI?
15. Give any two statistical agencies of Government of India.
16. Describe random sampling.
17. Explain judgement sampling.
18. Describe secondary data.
19. What are the uses of ogives?
20. Define population and sample.
21. Give one example of pictogram.
22. Prepare less than cumulative frequency table from the following data.

Class :	0-5	5-10	10-15	15-20
Frequency :	25	7	8	5

(8 × 2 = 16 Marks)

SECTION – C

Short essay. (Not to exceed 120 words) (Answer any six questions. Each question carries 4 marks)

23. Explain the functions of statistics.
24. Describe the main activities of the directorate of economics and statistics under the Government of Kerala.
25. Describe various functions of NSO.
26. Explain the sources of primary data.
27. Explain the advantages and disadvantages of sampling over census method.
28. Distinguish between stratified sampling and systematic sampling.
29. Explain the difference between inclusive and exclusive class intervals.
30. Distinguish between frequency polygon and frequency curve. Describe the method of construction of a frequency curve.
31. Explain cartogram. How can it be constructed?

(6 × 4 = 24 Marks)

SECTION – D

Long essay. (Answer any two questions. Each question carries 15 marks)

32. (a) Explain the importance and scope of statistics.
(b) Explain the applications of statistics in economics.
(c) Discuss the misuse of statistics.
33. (a) Explain various methods of planning and execution of survey sampling.
(b) Discuss any one method of selecting a simple random sample.

34. (a) Explain various methods of collecting primary data.
(b) Explain the main sources of secondary data.
35. (a) Explain the method of constructing cumulative frequency curves.
(b) Construct the cumulative frequency curves for the following data. Also find the median from the curves.

Class	:	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency:		4	8	11	15	12	6	3

(2 × 15 = 30 Marks)

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Reg. No. :

Name :

First Semester B.Sc. Degree Examination, March 2023

First Degree Programme Under CBCSS

Statistics

Complementary Course for Physics

ST 1131.2 : DESCRIPTIVE STATISTICS

(2017-2021 Admission)

Time : 3 Hours

Max. Marks : 80

Use of scientific calculator is permitted.

SECTION – A

Answer all questions. Each carries 1 mark.

1. Histogram can be drawn only for _____ distributions.
2. Define geometric mean.
3. The arithmetic mean of the numbers 1,2,..., n is _____.
4. If the first quartile is 20 and third quartile is 50, find the quartile deviation.
5. Define coefficient of variation.
6. If the correlation coefficient $r = 0$, what is the angle between the lines of regression?
7. In a distribution, $\mu'_1 = 3$, $\mu'_2 = 18$, the standard deviation of the distribution is _____.

8. Define kurtosis.
9. Why there are two regression lines?
10. What is Correlation?

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions. Each carries **2** marks.

11. What are different sources of secondary data?
12. Describe a frequency polygon.
13. Prove that the sum of deviations from mean is zero.
14. The arithmetic mean of two numbers is 10 and their geometric mean is 8. Find the numbers.
15. In a moderately assymmetrical distribution mode is 48.4 and median is 41.6. Find the value of the mean.
16. What is Sheppard's correction?
17. What do you mean by curve fitting?
18. Name different measures of dispersion.
19. How does standard deviation is affected by the change of origin and scale?
20. Explain the term central tendency.
21. State the invariance property of correlation coefficient.
22. What is the relation between raw moments and central moments?

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. Each carries **4** marks.

23. Calculate AM from the following data.
- | | | | | | | |
|--------------|---|------|-------|-------|-------|-------|
| Weekly wages | : | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| Frequency | : | 3 | 12 | 20 | 10 | 5 |
24. Calculate median for the following data.
- | | | | | | | |
|-------|---|-----|------|-------|-------|-------|
| Class | : | 0-5 | 5-10 | 10-15 | 15-20 | 20-25 |
| f | : | 5 | 10 | 15 | 12 | 8 |
25. Find the quartile deviation for the following:
391, 384, 591, 407, 672, 522, 777, 733, 1490, 2488.
26. Calculate mean deviation about Mean of 8, 24, 12, 16, 10, 20.
27. Given that the two regression equations are $8x - 10y + 65 = 0$, $40x - 18y - 214 = 0$. Identify the regression lines of y on x and x on y .
28. Explain skewness and give two measures of skewness.
29. Explain the principle of least squares method of fitting of a second degree curve of the form $y = a + bx + cx^2$ for ' n ' pairs of values.
30. Show that the limits of the correlation coefficient between two variables lies between -1 and $+1$.
31. Distinguish between correlation and regression.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. Each carries **15** marks.

32. The first four moments of a distribution about the value 4 of the variable are -1.5 , 17 , -30 and 108 . Find the moments about mean, β_1 and β_2 .
33. Fit a straight line to the following data
- | | | | | | | |
|---|---|----|----|---|---|---|
| x | : | 1 | 2 | 3 | 4 | 5 |
| y | : | 14 | 13 | 4 | 5 | 2 |

Estimate the value of y when $x = 3.5$

34. For the regression lines $4x - 5y + 33 = 0$ and $20x - 9y = 107$, find

- (a) the mean values of x and y ,
- (b) the coefficient of correlation between x and y , and
- (c) the variance of y given that the variance of x is 9.

35. Find the rank correlation coefficient between marks in two subjects A and B scored by 10 students:

A : 88 72 95 60 35 46 52 58 30 67

B : 65 90 86 72 30 54 38 43 48 75

(2 × 15 = 30 Marks)

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