MODEL QUESTION PAPER
B.Sc. Degree (C.B.C.S.) Examination
FIRST SEMESTER
Core Course-I–ST1CRT01-(Statistics)
DESCRIPTIVE STATISTICS

Time: Three Hours **Maximum Marks: 80**

Use of Non-programmable calculator and Statistical Tables allowed

PART A

Answer any **10**questions. Each question carries **2** marks.

1. Mention any two limitation on statistics.
2. Write down the names of any two attributes
3. What is meant by classification?
4. What is the arithmetic mean of the first 25 natural numbers?
5. Define weighted arithmetic mean..
6. Find the geometric mean of 4 and 9.
7. What do you mean by dispersion?
8. Define range**.**
9. Which measure of dispersion can be calculated in the case of open end class intervals?
10. Define coefficient of variation
11. Define the r^{th} central moment.
12. What is meant by skewness?

(10×2=20)

PART B

Answer any **6**questions. Each question carries **5** marks.

13. Distinguish between grouped and ungrouped frequency distributions.
14. Explain various methods of collecting primary data
15. Briefly explain Stem and Leaf chart.
16. Obtain the arithmetic mean of first ‘n’ natural numbers.
17. What do you mean by partition values? Explain.
18. Distinguish between absolute and relative measures of dispersion. Give any *one* relative measure of dispersion.
19. In a data if each observation is multiplied by 5 and 2 is added, how do it affect variance?
20. The first two moments of a distribution about the value 5 of a variable are 2 and 20.Find the mean and variance.
21. Explain the different methods to measure skewness?

(6×5=30)

PART C

Answer any **2** questions. Each question carries **15** marks.

22. Following is the distribution of marks in Statistics obtained by 100 students.

Marks (more than) :	0	10	20	30	40	50
Number of Students:	100	85	80	35	20	4

Calculate the mean marks. If 60% of the students pass the test, find the minimum mark obtained by a passed candidate.

23. Calculate the mean deviation about median and compare the variability of the two series X and Y:

X:	725	700	750	675	725	625	675	800	625	725	700	725	675
Y:	575	625	600	575	675	600	650	575	625	550	680	550	560

24. Calculate the Karl Pearson's coefficient of skewness from the folloing data

Class:	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequ:	2	3	5	10	30	15	11	10	8	6

25. For a frequency distribution the mean is 10, variance is 16, γ_1 is +1 and β_2 is 4. Find the first four moments about the origin and comment upon the nature of distribution.

(2 × 15=30)

Model Question Paper

B.Sc. (CBCS) Degree Examination
First Semester
Complementary Course - ST1CMT01 - DESCRIPTIVE STATISTICS
(Common to B.Sc. Mathematics and Physics Programme)

Time: Three Hours **Maximum: 80 Marks**

Use of Non-Programmable calculator and Statistical Tables allowed.

Part A (Answer any 10 questions. Each question carries 2 marks)

1. Define Statistics and population.
2. Distinguish between census and sampling.
3. Distinguish between nominal and ratio scale.
4. Distinguish between cluster sampling and systematic sampling.
5. Define Boxplot.
6. Define Partition values.
7. Distinguish between geometric mean and harmonic mean.
8. Define Skewness. Give the moment measure of skewness.
9. Find the mean and variance of the data if the first three moments of the data about the point 4 are 3, 25 and -110.
10. Distinguish between raw moments and central moments.
11. Define index numbers. Give the expression for Fisher's index number.
12. Define Whole sale price index and quantity index number.

$10 \times 2 = 20$ Marks

Part B (Answer any 6 questions. Each question carries 5 marks)

13. Briefly explain simple random sampling and stratified sampling.
14. Briefly explain different types of data.
15. Find the range and quartile deviation for the data given below.

X:	10	15	20	25	30
Frequency:	2	13	15	17	3

16. Draw the ogive and hence find the median of the data. Also find the mean deviation about the median.

Class:	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency:	7	13	20	10	5

17. Define relative measures of dispersion. Find the coefficient of variation of the data, 43, 32, 60, 12, 8, 4, 1.
18. Find the first three central moments of the data given below.

X:	3	4	5	7	10
Frequency:	13	16	21	18	13

19. Briefly explain the effect of change of origin and scale on the central moments.

20. Define cost of living index. Find the cost of living index for the data given below.

	Price in 2007	Price in 2017	% of usage
A	61	70	15
B	42	48	16
C	112	126	40
D	43	51	22
E	8	11	7

21. Briefly explain the tests for a good index number.

$6 \times 5 = 30$ Marks

Part C (Answer any 2 questions. Each question carries 15 marks)

22. (1) Distinguish between primary and secondary data.
    (2) Explain the various methods to collect the primary data.
23. In a test given to two groups of students the scores obtained are as follows:

Group 1:	23	11	19	26	35	46	53	18	36
Group 2:	31	18	21	31	48	40	18	23	30

    (1) Which group is more consistent?
    (2) Find the combined mean and standard deviation.
24. (1) Define kurtosis of a data.
    (2) Briefly explain the various measures of kurtosis.
    (3) Find the coefficient of kurtosis of the data given below.

Class:	0 – 4	4 – 8	8 – 12	12 – 16	16 - 20
Frequency:	2	3	11	3	1

25. (1) Find the Laspeyer's and Paasche's indices for the data given below.

Item	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	23	7	32	5
B	57	26	75	30
C	125	14	125	17
D	70	20	130	17

    (2) Show that the Fisher's index satisfies the time reversal test.

$(2 \times 15 = 30$ Marks$)$

MODEL QUESTION PAPER
B. Sc. Psychology (CBCS) Degree Examination
FIRST SEMESTER - Complementary Statistics-Course I
ST1CMT01 - BASIC STATISTICS

Time: Three Hours **Maximum: 80 Marks**

Use of Non-Programmable calculator and Statistical Tables allowed.

Part A (Short Answer Questions)

Answer **any 10** questions. Each Question carries **2** marks

1. Define Statistical Population.
2. Point out the importance of Statistics in Psychology.
3. Write a note on qualitative classification give examples?
4. Write a note on Bar diagram
5. Define two kinds of Statistical data.
6. Distinguish between less than and greater than cumulative frequency
7. Define weighted mean
8. Define an Average
9. Mean of 20 value is 45. If one of these value is taken as 64 instead of 40, find the corrected mean
10. The arithmetic mean of a set of 10 numbers is 50. If we subtract each entry by 3, what will be the mean of the new set?
11. Define Mode Give the formula for calculating it for different type of data
12. If Mean = 30Kgs, Median =27 Kg find Mode.

(10*2=20 marks)

Part B (Brief Answer Questions)

Answer **any6** questions. Each Question carries **5** marks

13. What are the main methods of collecting primary data?
14. With the help of the following data ,Construct a histogram

Marks obtained	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Number of students	16	20	25	30	18	10	8

15. Distinguish between census and sampling.
16. Mean annual salaries paid to 200 employees of the company was Rs.500. The mean annual salaries paid to male and female employees were Rs.520 and Rs.420 respectively. Determine the number of males and females employed by the company.
17. Find the Mean for the following data.

Class:	0-10	10-20	20-30	30-40
Frequency:	1	3	4	2

18. What is quantitative classification? Which are the important components of a grouped frequency distribution? Define each of them?
19. What is Stratified sampling? When it is used? What are its merits and demerits?

20. Draw the two ogives for the following data and find out the median

Class	0-10	10-20	20-30	30-40	40-50
Frequency	5	12	25	15	6

21. In the frequency distribution of 100 families given below some frequencies are missing. Find the missing frequencies if the median is 50

Class:	0-20	20-40	40-60	60-80	80-100
Frequency:	14	?	27	?	15

(6*5=30 marks)

Part C (Long Essay Questions)

Answer **any2** questions. Each Question carries **15** marks

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

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

23. Define simple random sample? Explain the methods of selecting simple random sample without replacement? What are its merit and demerits?

24. Calculate mean, median and mode from the following data

Marks	0	10	20	30	40	50	60	70	80
No of Students	1	9	26	59	72	52	29	7	1

25. Calculate mean and median for the following data

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

(2*15=30 marks)

Model Question Paper

B.Sc. (CBCS) Degree Examination
First Semester
Core Course - ST1CRT01 - DESCRIPTIVE STATISTICS

Time: Three Hours **Maximum: 80 Marks**

Use of Non-Programmable calculator and Statistical Tables allowed.

Part A (Answer any 10 questions. Each question carries 2 marks)

1. Define Statistics and population.
2. Distinguish between census and sampling.
3. Distinguish between nominal and ratio scale.
4. Distinguish between cluster sampling and systematic sampling.
5. Define Boxplot.
6. Define Partition values.
7. Distinguish between geometric mean and harmonic mean.
8. Define Skewness. Give the moment measure of skewness.
9. Find the mean and variance of the data if the first three moments of the data about the point 4 are 3, 25 and -110.
10. Distinguish between raw moments and central moments.
11. Define index numbers. Give the expression for Fisher's index number.
12. Define Whole sale price index and quantity index number.

$10 \times 2 = 20$ Marks

Part B (Answer any 6 questions. Each question carries 5 marks)

13. Briefly explain simple random sampling and stratified sampling.
14. Briefly explain different types of data.
15. Find the range and quartile deviation for the data given below.

X:	10	15	20	25	30
Frequency:	2	13	15	17	3

16. Draw the ogive and hence find the median of the data. Also find the mean deviation about the median.

Class:	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency:	7	13	20	10	5

17. Define relative measures of dispersion. Find the coefficient of variation of the data, 43, 32, 60, 12, 8, 4, 1.
18. Find the first three central moments of the data given below.

X:	3	4	5	7	10
Frequency:	13	16	21	18	13

19. Briefly explain the effect of change of origin and scale on the central moments.

20. Define cost of living index. Find the cost of living index for the data given below.

	Price in 2007	Price in 2017	% of usage
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B	42	48	16
C	112	126	40
D	43	51	22
E	8	11	7

21. Briefly explain the tests for a good index number.

$6 \times 5 = 30$ Marks

Part C (Answer any 2 questions. Each question carries 15 marks)

22. (1) Distinguish between primary and secondary data.
    (2) Explain the various methods to collect the primary data.
23. In a test given to two groups of students the scores obtained are as follows:

Group 1:	23	11	19	26	35	46	53	18	36
Group 2:	31	18	21	31	48	40	18	23	30

    (3) Which group is more consistent?
    (4) Find the combined mean and standard deviation.
24. (1) Define kurtosis of a data.
    (4) Briefly explain the various measures of kurtosis.
    (5) Find the coefficient of kurtosis of the data given below.

Class:	0 – 4	4 – 8	8 – 12	12 – 16	16 - 20
Frequency:	2	3	11	3	1

25. (1) Find the Laspeyer's and Paasche's indices for the data given below.

Item	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	23	7	32	5
B	57	26	75	30
C	125	14	125	17
D	70	20	130	17

    (3) Show that the Fisher's index satisfies the time reversal test.

$(2 \times 15 = 30$ Marks$)$

MODEL QUESTION PAPER

Complementary Course to BCA Programme

Semester I - Course I

ST1CMT01 - BASIC STATISTICS AND INTRODUCTORY

PROBABILITY THEORY

Time: Three Hours **Maximum: 80 Marks**

Use of Non-Programmable calculator and Statistical Tables allowed.

Part A (Short Answer Questions)

Answer **any 10** questions. Each Question carries **2** marks

1. Define arithmetic mean and mention its uses.
2. Define coefficient of variation.
3. What is Box –Plot?
4. Define Scatter diagram. Mention its use.
5. How do you interpret when the coefficient of correlation is zero?
6. Define correlation coefficient and give its limits.
7. Give axiomatic definition to probability
8. Define sample space. Write the sample space if two coins are tossed simultaneously
9. When will you say three events are mutually independent?
10. What are the properties of the distributionfunction?
11. Find the value of k if $f(x) = k\left(\frac{2}{3}\right)^x$, $x = 1,2,\ldots.$, is a pdf
12. Define mgf of a continuous random variable. State its important properties.

(10*2=20 marks)

Part B (Brief Answer Questions)

Answer **any6** questions. Each Question carries **5** marks

13. How is variance affected by change of scale and origin?

14. What are regression coefficients? Obtain the relationship between the correlation coefficient and regression coefficient.

15. Distinguish between discrete and continuous random variable. Give one example each.

16. Distinguish between distribution function and density function of a random variable X.

17. Explain how will you draw ogives? Explain its uses with an example.

18. Two regression equations are 3x+2y-26=0 and 6x+y-31=0. Find(a) the means of X and Y.

(b) The coefficient of correlation between X and Y

19. State and prove Bayes theorem.

20. If two dice are thrown, what is the probability that (a) the sum is greater than 8

(b) neither 7 nor 11.

21. A random variable X has the probability function $f(x) = \frac{1}{2} e^{-|x|}$; $-\infty < x < \infty$ Obtain the variance

(6*5=30 marks)

Part C (Long Essay Questions)

Answer **any2** questions. Each Question carries **15** marks

22. Calculate the arithmetic mean and standard deviation for the following data.

Age in Years	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No of persons	8	7	15	18	22	14	10	5

23. For the following data it is required to estimate demand when price is 20. Obtain the suitable regressing equation. Also find the estimate.

Price	18	24	25	20	28	32
Demand	8	7	6	10	5	4

24. The chances of A, B and C becoming manager of a company are 4:2:3. The probability that bonus scheme will be introduced if A, B and C became managers are 0.3,0.5 and 0.8.The bonus scheme was introduced. What is the probability that A is appointed as the manager

25. Find the distribution function , mgf ,mean and variance of the distribution with pdf

$$f(x) = \left\{\frac{1}{5} e^{\frac{x}{5}}\right\} \qquad 0 < x < \infty$$

0 elsewhere

(2*15=30 marks)

Model Question Paper

B.Sc. (CBCS) Degree Examination
First Semester
Complementary Course - ST1CMT01 - DESCRIPTIVE STATISTICS
(For B.Sc. Mathematics (Model II) Vocational Programme)

Time: Three Hours **Maximum: 80 Marks**

Use of Non-Programmable calculator and Statistical Tables allowed.

Part A (Answer any 10 questions. Each question carries 2 marks)

1. Give some sources of secondary data
2. Explain stratified sampling
3. What are the demerit of quartile deviation
4. Explain relative measures of dispersion
5. Give axiomatic definitions to probability
6. What are the advantages of primary data?
7. Write the relation between the first four central and raw moments
8. What is independence of events? Give an example of pair of events which are independent
9. Explain cluster sampling
10. What is meant by sampling?
11. Find any one measure of skewness of the data 4,3,10,7,2,11,12
12. What is mean by ogive?

(10 x 2=20)

PART- B

(Answer any 6 each carries mark **5**)

13. What are the difference between primary and secondary data
14. What are the points involved while tabulating a data?
15. Explain stratified sampling . Compare it with simple random sampling
16. Calculate harmonic mean of 12,6,3,1,18,36
17. State and prove addition theorem for two events. Mention the case when the events are mutually exclusive
18. What is probability ?Explain about its different approaches
19. 5 cards are drawn from a pack of 52 cards.Find the probability of getting (i)2 spades and 3 diamonds.(ii)all spades (iii)no diamonds

20. What are the importance of statistics ?
21. State and prove Bayes theorem

. (6 x 5=30)

PART- C

(Answer any 2 each carries mark **15**)

22. Calculate mean, meadian and mode of the following data

x	15	35	55	75	95	115	135
f	6	18	29	46	11	7	3

23. Explain about different types of sampling.
24. Two bags contain 8 white,5 black and 4 white,6 black balls. One ball is randomly transferred from first bag to second and then a ball is drawn from the second. It is found to be a black ball. Find the probability that the transferred ball is white
25. Draw two ogives the following distribution and find mean and quartile deviation from the ogive

Class	5-20	20-35	35-50	50-65	65-80	80-95	95-110	110-125
Fr	4	13	28	43	68	31	9	4

(2 x 15=30)