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Seat No.	891

B.Sc. (Part – I) (Semester – I) Examination, 2011
STATISTICS (Paper – I)
Descriptive Statistics – I
Sub. Code : 47817

Day and Date : Saturday, 12-11-2011 Total Marks : 40
Time : 10.30 a.m. to 12.30 p.m.

Instructions: *1) **All** the questions are **compulsory**.*
*2) Figures to the **right** indicate **full** marks.*

1. Choose the correct alternative : **8**

i) _____ is internationally known for his work on maximum likelihood estimation invariants for probability distribution and sufficient statistics.
a) P.C. Mahalanobis b) C.R. Rao
c) P.V. Sukhatme d) V.S. Huzurbazaar

ii) The concept of 'absolute zero' is used in _____
a) Nominal scale b) Ordinal scale
c) Interval scale d) Ratio scale

iii) _____ divides the data into two equal parts.
a) Median b) Mean c) Mode d) Geometric Mean

iv) _____ is not based on all the observation in the data.
a) Arithmetic mean b) Geometric mean
c) Harmonic mean d) Median

v) Two samples A and B have the same standard deviation but the mean of A is greater than mean of B. The coefficient of variation of A is
a) Less than B b) Greater than B
c) Equal to B d) Unable to find relation

vi) If all the values of the observations in a population equal to 30 then standard deviation is _____
a) 1 b) 0 c) 30 d) 15

P.T.O.

vii) Given that, mean = 1, variance = 3 and $\mu_3 = 0$, then given distribution is _____

a) Positively skewed
b) Negatively skewed
c) Symmetric
d) Leptokurtic

viii) For a platykurtic curve _____

a) $\gamma_2 < 0$ b) $\gamma_2 > 0$ c) $\gamma_2 = 0$ d) $\beta_2 > 3$

2. Attempt **any two** : **16**

i) Define Mode. Derive the formula for mode in case of grouped frequency distribution.

ii) Define Mean Deviation. State and prove minimal property of mean deviation.

iii) What do you understand by Skewness ? Explain different types of skewness with suitable diagram. State the measures of skewness based on moments.

3. Attempt **any four** : **16**

i) Write note on Nominal and Ordinal scale of measurement.

ii) Distinguish between discrete variable and continuous variable.

iii) What are the merits and demerits of median ?

iv) Define coefficient of variation. State any two uses of it.

v) State and prove the effect of change of origin and scale on standard deviation.

vi) Write note on Sheppard's corrections for central moments.

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Total No. of Pages : 2

Seat No.	

B.Sc. (Part - I) (Semester - II) Examination, 2013

DESCRIPTIVE STATISTICS - II (Paper - III)

Sub. Code: 55749

Day and Date : Monday, 22-04-2013 **Total Marks : 50**

Time : 3.00 p.m. to 5.00 p.m.

Instructions : 1) **All questions are compulsory.**

2) **Figures to the right indicate full marks.**

Q1) Choose correct alternative : **[10]**

1) The points of a scatter diagram are on a vertical line then the coefficient of correlation is .....

A) +1 B) –1

C) 0 D) less than 0

2) If the correlation coefficient between X and Y is 0.8, then the correlation coefficient between – X and – Y is .....

A) –0.8 B) 0.8

C) 0.64 D) 0.4

3) If one regression coefficient is greater than one, then other must be .....

A) greater than one B) equal to one

C) less than one D) equal to zero

4) If $r = \pm 1$, then the lines of regression are .....

A) coincident B) parallel

C) perpendicular D) asymptotic

5) In case of three attributes, total number of ultimate class frequencies are .....

A) 8 B) 27

C) 16 D) 64

6) If attributes A and B are completely associated then coefficient of association is .....

A) 1 B) 0

C) –1 D) None of these

7) The number of letters used to denote a class in the theory of attribute is called as .....

A) manifold class B) dichotomous class

C) order of a class D) frequency of the class

P.T.O.

8) The collection of information (data) about each and every individual of a country is known as .....

A) vital statistics B) demography

C) census D) sample survey

9) If NRR>1 then the population is .....

A) increasing B) decreasing

C) steady D) none of these

10) STDR for standard population is .....

A) CDR B) TFR

C) SDR D) NRR

Q2) Attempt any two of the following : **[20]**

a) Define the terms :

i) Covariance between two variables X and Y.

ii) Karl Pearson's correlation coefficient.

Show that coefficient of correlation r is independent of change of origin and scale.

b) Define regression. Derive the line of regression of X and Y by the method of least square.

c) Define Youle's coefficient of association (Q) and coefficient of colligation (Y).

Prove that $Q = \frac{2Y}{(1+Y^2)}$.

Q3) Attempt any Four of the following : **[20]**

a) Write short note on the scatter.

b) The values of two regression coefficients b_{XY} and b_{YX} are 4/5 and 9/20 respectively. Find correlation coefficient between X and Y.

c) Show that regression coefficients are independent of change of origin but not of change of scale.

d) Explain condition of consistency in case of two attributes.

e) Define the rates : TFR and GRR used in demography.

f) Define age SDR and infant mortality rate.

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Total No. of Pages : 2

Seat No.	

B.Sc. (Part - I) (Semester - I), Examination, November -2015

STATISTICS (Paper - I)

Descriptive Statistics (New Course)

Sub. Code: 59679

Day and Date :Saturday, 21 - 11 - 2015 **Total Marks :50**

Time : 12.00 noon to 02.00 p.m.

Instructions : **1)** **All questions are compulsory.**

2) **Figures to the right indicate full marks.**

Q1) Choose the most correct alternative: **[10]**

i) _____ is least affected by extreme values.

a) Median b) Arithmetic mean

c) Geometric mean d) Harmonic mean

ii) To compare consistency of observations among two data sets, we can use _____ as a most efficient measure of dispersion.

a) range b) quartile deviation

c) mean deviation d) coefficient of variation

iii) If the first and last class intervals are open, then we can use _____ as a measure of dispersion.

a) range b) quartile deviation

c) mean deviation d) standard deviation

iv) The first order moment about mean is always _____ .

a) zero b) one

c) mean d) variance

v) The value of median is equivalent to the value of _____ .

a) 3^{rd} quartile b) 2^{nd} decile

c) mean d) 50^{th} percentile

P.T.O.

vi) The distribution is symmetric, if _____ moments are zero.
   a) even ordered central b) odd ordered central
   c) odd ordered raw d) all raw and central

vii) If the mean, median and mode of a distribution are 5,6,7 respectively then distribution is _____.
   a) Symmetric b) Skewed negatively
   c) Skewed positively d) None

viii) The mean age of group of 10 students is 20 years today. What was their mean age in months before 10 years?
   a) 240 b) 120
   c) 100 d) 130

ix) For the data classified according to 'n' attributes, the total numbers of ultimate class frequencies are.
   a) 2n b) 3n
   c) 2^n d) 3^n

x) The most correct relation between coefficient of association (Q) and coefficient of Colligation (Y) is.
   a) $|Q|=|Y|$ b) $|Q|\leq|Y|$
   c) $|Q|\geq|Y|$ d) $|Q|<|Y|$

Q2) Answer any two of the following. **[20]**
   a) Derive formula for median in case of grouped frequency distribution.
   b) Define Mean Deviation (M.D.), prove its minimal property.
   c) Explain what you mean by consistency of data. Derive the conditions of consistency in case of three attributes.

Q3) Attempt any four of the following **[20]**
   a) Write a note on skewness of the distribution.
   b) State and prove minimal property of Mean Square Deviation (MSD).
   c) For any two positive observations find arithmetic mean (AM), geometric mean (GM) and harmonic mean (HM). Hence prove that AM×HM = $(GM)^2$.
   d) Find the variance of first 'n' natural numbers.
   e) Define coefficient of association (Q) Showthat $-1\leq Q\leq 1$.
   f) Define moments about origin and moments about mean and prove that

$$\mu_2 = \mu_2' - \mu_1'^2$$

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Total No. of Pages : 2

Seat No.	

B.Sc. (Part - I) (Semester - I) Examination, October - 2017

STATISTICS

Descriptive Statistics-I (Paper-I)

Sub. Code : 59679

Day and Date : Monday, 30 - 10 - 2017 **Total Marks : 50**

Time : 12.00 noon to 2.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**

Q1) Choose the most correct alternative: **[10]**

a) If the mean, median and mode of a distribution are 5, 6 and 7 respectively then distribution is _____.

i) Symmetric ii) Skewed negatively
iii) Skewed positively iv) None of these

b) The second order central moment is _____.

i) Zero ii) One
iii) Mean iv) Variance

c) The most stable measure of central tendency is _____.

i) Mean ii) Median
iii) Mode iv) Lower quartile

d) If data contains only three values 12, 13 and 14 respectively then the coefficient of skewness is _____.

i) 0 ii) 1
iii) -1 iv) None of these

e) The concept of standard deviation was introduced by _____.

i) P.V. Sukhatme ii) C.R. Rao
iii) R.A. Fisher iv) Karl Pearson

f) The mode is obtained graphically by using _____.

i) Less than ogive ii) Greater than ogive
iii) Both (i) and (ii) iv) Histogram

P.T.O.

g) For consistency of data, (B) = 30, (A) = 40, $(\alpha\beta)$ = 45, N = 100, the value of $(\alpha\beta)$ = _____.

i) 55 ii) 60

iii) 15 iv) 25

h) Coefficient of quartile deviation of non-negative observations always _____.

i) Lies between 0 & 1 ii) Lies between -1 & 1

iii) Greater than zero iv) None of these

i) The A.M of 7 numbers 7, 9, 12, x, 5, 4, 11 is 9. Then value of 'x' is _____.

i) 134 ii) 14

iii) 15 iv) 8

j) The relation between Yule's Coefficient of association (Q) and coefficient of colligation (Y) is _____.

i) $Q = 2Y/(1+Y^2)$ ii) $Q = Y^2/(1+Y)$

iii) $|Y| \geq |Q|$ iv) none of these

Q2) Attempt any two of the following. **[20]**

a) Define mean deviation. State and prove minimal property of mean deviation.

b) Define arithmetic mean. Show that it is affected by both change of origin and scale transformation.

c) Define the Yule's coefficient of association and coefficient of colligation. State and prove relation between them.

Q3) Attempt any four of the following. **[20]**

a) Distinguish between discrete and continuous variables.

b) Write a note on Kurtosis.

c) If a & b are two positive observations then prove that A.M ≥ G.M. ≥H.M.

d) What do you mean by consistency of data? Obtain a set of conditions for consistency in case of two dichotomous attributes.

e) Obtain the relation between first three central moments in terms of raw moments.

f) Write a note on Sheppard's correction.

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Total No. of Pages : 3

Seat No.	

B.Sc. (Part - I) (Semester - I)
Examination, April - 2018
STATISTICS
Descriptive Statistics - I (Paper - I)
Sub. Code : 59679

Day and Date : Tuesday, 17 - 04 - 2018 **Total Marks : 50**

Time : 12.00 noon to 2.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Use of non programmable calculator is allowed.**

Q1) Choose the most correct alternative **[10]**

a) Mode of a continuous frequency distribution can be obtained graphically by using _____.

i) Less than ogive ii) Greater than ogive

iii) Both (i) and (ii) iv) Histogram

b) The H.M. of 9 and x is 12. Then value of 'x' is _____.

i) 21 ii) 18

iii) 13 iv) 11.5

c) Which of the following average is not affected by extreme values? _____.

i) A.M. ii) G.M.

iii) H.M. iv) Median

d) If 25% of items are less than 10 and 25% of items are more than 40 then Q.D. is _____.

i) 15 ii) 25

iii) 30 iv) 50

P.T.O.

e) The unit less measure of dispersion is _____.

i) Q.D. ii) M.D.

iii) Both (i) and (ii) iv) C.V.

f) Standard deviation is independent of change of _____.

i) Origin ii) Scale

iii) Both origin and scale iv) Neither origin nor scale

g) The measure of kurtosis $\gamma_1 > 0$, then the frequency curve is _____.

i) leptokurtic ii) platykurtic

iii) mesokurtic iv) none of these

h) For the negatively skewed distribution the third order central moment is always _____.

i) positive ii) non-negative

iii) negative iv) zero

i) If the value of Yule's coefficient of association between A and B is +1, then the value of $(A\beta)$ is _____.

i) 0 ii) 1

iii) Both (i) and (ii) iv) None of these

j) The coefficient of colligation lies between _____.

i) -1 and 0 ii) 0 and 1

iii) -1 and 1 iv) none of these

Q2) Attempt any two of the following : **[20]**

a) Derive the formula for median of grouped frequency distribution.

b) Define mean deviation about any arbitrary point 'a'. State and prove minimal property of the mean deviation.

c) Write a short note on :

i) Skewness.

ii) Kurtosis.

Q3) Attempt any four of the following : **[20]**

a) Define arithmetic mean and derive the formula for mean of pooled data (for two data set only).

b) Define any two absolute measures and relative measures of dispersion.

c) With usual notations, show that $\beta_2 \geq 1$.

d) For three dichotomous attributes A, B and C show that

$$(\alpha\beta\gamma) = N - (A) - (B) - (C) + (AB) + (BC) + (AC) - (ABC)$$

e) If A and B are any two independent dichotomous attributes, show that, α and B are also independent.

f) If (A) = (B) = 300, (AB) = 180, N = 500, compute Yule's coefficient of association and comment on the association.

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Total No. of Pages : 3

Seat No.	

B.Sc. (Part - I) (Semester - I) Examination, June-2019

STATISTICS

Descriptive Statistics - I (Paper-I)

Sub. Code : 59679

Day and Date : Monday, 10-06-2019 **Total Marks : 50**

Time : 11.00 a.m. to 1.00 p.m.

Instructions : 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Use of scientific calculator is allowed.

Q1) Choose the most correct alternative : **[10]**

a) Which of the following is false?
   i) Primary data is more reliable
   ii) Collection of Primary data is time consuming
   iii) Collection of Primary data is expensive
   iv) Collection of Secondary data is time consuming and expensive

b) Which one of the following is example of attribute?
   i) Blood group of a person
   ii) Length of screw produced by machine
   iii) Speed of vehicle
   iv) Temperature at a certain place

c) The most favourable colour of 40 individuals is recorded. For this data we can compute
   i) Mean ii) Median
   iii) Mode iv) None of these

d) Median is equal to _____.
   i) 2^{nd} quartile ii) 5^{th} decile
   iii) 50^{th} percentile iv) All of the above

P.T.O.

e) If all the values in the data are equal to 50 then what you conclude?

i) Mean, median and mode need not be the same

ii) Mean = 50 and SD = 50

iii) Mean = 50 and SD = 0

iv) Mean = 0 and SD = 0

f) The second central moment is :

i) Mean ii) Variance

iii) Mean deviation iv) Median

g) If the distribution is positively skewed then_____.

i) Mean < Median < Mode ii) Mean > Median > Mode

iii) Median < Mean < Mode iv) Median < Mode < Mean

h) If Yules coefficient of association (Q) between two attributes A and B is -1 then these two attributes are_____.

i) Completely dissociated ii) Completely associated

iii) Independent iv) None of these

i) With three attributes the total number of class frequencies of all order is equal to_____.

i) 9 ii) 27

iii) 8 iv) 81

j) With usual notations, the class frequency ($\alpha\beta$) can be expressed in terms positive class frequencies as _____.

i) $1-(A)-(B)+(AB)$ ii) $N-(A)-(B)$

iii) $N-(A)-(B)+(AB)$ iv) None of these.

Q2) Attempt Any Two of the following. [20]

a) Define Mode and derive the formula of Mode for grouped frequency distribution.

b) What do you understand by Skewness? Explain the types of Skewness and Show that Bowley's coefficient of Skewness (S_B) lies between –1 to 1.

c) Derive the conditions of consistency for 3 attributes A, B and C in terms of positive class frequencies.

Q3) Attempt Any Four from the following: **[20]**

a) Explain nominal scale and ordinal scale

b) Define :

i) Range ii) Q.D.

iii) M.D. iv) S.D.

v) C.V.

c) Discuss the effect of change of origin and scale on S.D.

d) State and prove the minimal property of Mean Square Deviation

e) Write short note on Sheppard's corrections for central moments.

f) Explain with example :

i) Ultimate class frequencies

ii) Fundamental set of class frequencies.

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Seat No.

B.Sc. (Part - I) (Semester - I) (CBCS) Examination, June-2019

STATISTICS

DSC-7A : Descriptive Statistics - I (Paper - I)

Sub. Code : 71608

Day and Date : Monday, 10-06-2019 **Total Marks : 50**

Time : 11.00 a.m. to 1.00 p.m.

Instructions : 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Use of scientific calculator is allowed.

Q1) Select the correct alternative from the following. **[10]**

a) If the mean, median and mode of a distribution are 105, 106 and 107 respectively then distribution is _____.

i) Symmetric. ii) Skewed nagatively

iii) Skewed positively iv) None of these.

b) The measure of kurtosis $\gamma_2 > 0$, then the frequency curve is _____.

i) Leptokurtic ii) Platykurtic

iii) Mesokurtic iv) None of these

c) If X takes values 1500, 1100, a, 1200 and 1300 such that $\sum_{i=1}^{n}(xi-1300) = 0$ than the value of 'a' is _____.

i) 1300 ii) 1400

iii) 1350 iv) 1250

d) If data set has four values 12, 13, 13 and 14 respectively then the coefficient of skewness is _____.

i) 0 ii) 1

iii) –1 iv) None of these

P.T.O.

e) Coefficient of variation of group A is less than coefficient of variation of group B, then group_____.

i) A is more consistent than group B

ii) B is more consistent than group A

iii) B is more reliable than group A

iv) B is more homogenous than group A

f) The mode is obtained graphically by using _____.

i) Less than ogive ii) Greater than ogive

iii) Both (i) and (ii) iv) Histogram

g) For consistent data, (B) = 30, (A) = 40, (αβ) = 45, N = 100, the value of (αB) = _____.

i) 55 ii) 25

iii) 15 iv) 60

h) Coefficient of quartile deviation of non-negative observations always_____.

i) Lies between 0&1 ii) Lies between –1&1

iii) Greater than zero iv) None of these

i) The A.M of 7 numbers 7,9,12, x, 5,4,11 is 9. Then value of 'x' is_____.

i) 134 ii) 14

iii) 15 iv) 8

j) The coefficient of colligation lies between_____.

i) –1and 0 ii) 0 and 1

iii) –1 and 1 iv) None of these

Q2) Attempt any Two of the following. **[20]**

a) Define arithmetic mean. Show that it is affected by both change of origin and scale transformation.

b) Define standard deviation (S.D.) In case of two groups of size n_1 and n_2 mean $\bar{x}_1$ and $\bar{x}_2$ and (S.D.) σ_1 and σ_2 respectively, derive the formula for S.D. of pooled data.

c) Define the Yule's coefficient of association and coefficient of colligation. State and prove relation between them.

Q3) Attempt any four of the following. [20]

a) For any two positive observations, show that A.M.≥ G.M. ≥ H.M.

b) Define mean square deviation about any arbitrary point 'a'. State and prove minimal property of the mean square deviation.

c) Express first four central moments in terms of raw moments.

d) Write a short note on Skewness.

e) If A and B are any two independent dichotomous attributes, show that, α and β are also independent.

f) With usual notations, show that $\beta_2 \geq 1$.

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A – 138

Seat No.	

B.Sc. (Part – I) (Semester – I) Examination, 2012
STATISTICS (Paper – I)
Descriptive Statistics
Sub. Code : 47817

Day and Date : Thursday, 3-5-2012 Total Marks : 40
Time : 11.00 a.m. to 1.00 p.m.

Instructions : *1)* ***All*** *the questions are* ***compulsory.***
2) Figures to the ***right*** *indicate* ***full*** *marks.*

1. Choose the **most correct** alternative : **8**

i) National Sample Survey (NSS) was setup in 1950 under the guidance of _____

a) C.R. Rao b) P.V. Sukhatme
c) P.C .Mahalnobis d) V.S. Huzurbazar

ii) A survey by using complete enumeration method is known as _____

a) Pilot survey b) Census survey
c) Sample survey d) Planning survey

iii) The arithmetic mean of group of 8 observations is 9. If 2 more observations 10 and 11 are added to the group, then arithmetic mean will be equal to _____

a) 8.5 b) 9.0 c) 9.3 d) 10.5

iv) The twentieth percentile divides the data in the ratio _____

a) 1:1 b) 1:2 c) 1:4 d) 1:20

v) If the first and last class interval is open, we can use _____ as measure of dispersion.

a) Range b) Quartile deviation
c) Mean deviation d) Standard deviation

P.T.O.

vi) Mean square deviation is minimum when it is taken about _____

a) Mean b) Median c) Mode d) First quartile

vii) The first order moment about mean is always _____

a) Zero b) One c) Mean d) Variance

viii) The relation Mean > Median > Mode is valid for _____

a) Symmetric distribution b) Positively skewed distribution

c) Negatively skewed distribution d) None of the distribution

2. Attempt **any two** of the following : **16**

i) Define mode. Derive formula for mode in case of grouped frequency distribution.

ii) Define Mean Deviation (M.D.) and prove its minimal property.

iii) Define raw and central moments. Derive relations for central moments in terms of raw moments.

3. Attempt **any four** of the following : **16**

i) Show that sum of deviations of observations taken from arithmetic mean is always zero.

ii) Write a note on Kurtosis of the distribution.

iii) Discuss the effect of change of origin and scale on standard deviation (S.D.).

iv) Define median. How it is determined graphically ?

v) Distinguish between absolute and relative measures of dispersion.

vi) Explain, qualitative and quantitative data.

G –447

Total No. of Pages : 3

Seat No.	

B.Sc.(Part-I)(Semester-I) EXAMINATION, 2013

STATISTICS (PAPER-I)

DESCRIPTIVE STATISTICS - I

SUB. CODE : 47817

Day and Date : Friday, 24-05-2013 **Total Marks : 40**

Time :11.00 a.m. to 01.00 p.m.

Instructions : 1) All the questions are compulsory.

2) Figures to the right indicate full marks.

Q1) Choose the most correct alternative : [08]

a) The senior Indian statistician P. V. Sukhatme was born in 1911 at _____.

i) Kolhapur ii) Pune

iii) Budh village of Satara iv) Gokak in Karnataka

b) A primary data is a data collected from _____.

i) office records ii) direct interviews

iii) bulletins iv) annual reports

c) The arithmetic mean of first 'n' natural numbers is _____.

i) $\frac{n+1}{2}$ ii) $\frac{n(n+1)}{2}$

iii) $\frac{n(n+1)}{4}$ iv) $\frac{n(n+1)}{2n}$

d) The measure of central tendency used to calculate average speed is _____.

i) arithmetic mean
ii) geometric mean
iii) harmonic mean
iv) median

e) To compare consistency of observations among two data sets, we can use _____ as a most efficient measure of dispersion.

i) range
ii) quartile deviation
iii) mean deviation
iv) coefficient of variation

f) If each observation in the set is divided by 15 then the standard deviation of the new set is _____ of original standard deviation.

i) 15 times
ii) 1/15 times
iii) 225 times
iv) 1/225 times

g) If for a distribution mean = 1, variance = 3, $\mu_3 = 0$ and $\mu_4 = 27$, then the given distribution is _____.

i) positively skewed
ii) negatively skewed
iii) symmetric
iv) either positively or negatively skewed

h) For a platykurtic distribution, β_2 is _____.

i) greater than 3
ii) less than 3
iii) equal to 3
iv) not decided

Q2) Attempt any two of the following : [16]

a) Define arithmetic mean (AM), geometric mean (GM) and harmonic mean (HM).

Prove that, for any two positive observations, AM ≥ GM ≥ HM.

b) Define standard deviation (S.D.). Derive the formula for combined standard deviation of two groups.

c) Define raw and central moments. Derive first four central moments in terms of moments about origin.

Q3) Attempt any four of the following : [16]

a) Explain nominal and ordinal scales of measurements.

b) Write a note on Sheppard's corrections for central moments.

c) Show that, sum of squares of deviations of observations taken from arithmetic mean is always minimum.

d) Write a note on partition values.

e) Find arithmetic mean of the values 1, 4, 9,....., n^2.

f) Define different type of relative measures of dispersion.

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N – 896

Seat No.	

Total No. of Pages : 3

B.Sc. (Part - I) (Semester - I) Examination, April - 2015

STATISTICS (Paper - I)

Descriptive Statistics - I

Sub. Code: 59679

Day and Date : Saturday, 25-04-2015 **Total Marks : 50**

Time : 12.00 noon to 2.00 p.m.

Instructions : 1) All questions are compulsory.

2) Figures to right indicate full marks.

Q1) Choose the most correct alternative: **[10]**

a) All observations in a data set are equal then median of the data set is equal to value of----------.

i) One of the observations ii) Mean

iii) Mode iv) All are correct

b) Value of coefficient of quartile deviation of non-negative observations always ----------.

i) Lie between 0 & 1 ii) Lie between - 1 & 1

iii) Greater than zero iv) None of these

c) The relation between μ_4 and μ_2 is $\mu_4 > 3\mu_2^2$ then the distribution curve is ----------.

i) Leptokurtic ii) Platykurtic

iii) Mesokurtic iv) Symmetric

d) For consistency of data, (B) = 30, (A) = 40, ($\alpha\beta$) = 45, N = 100, the value of (αB) = ...

i) 55 ii) 60

iii) 15 iv) 25

e) The sum of absolute deviations of observations taken from median is always .....

i) zero ii) one

iii) minimum iv) maximum

f) If coefficient of variation and standard deviation of a series are 60% and 20 respectively. The value of arithmetic mean is ----------.

i) 100/6 ii) 100/3

iii) 3/100 iv) 6/100

g) For negatively skewed distribution the correct relation between mean, median and mode is ----------.

i) Mean < Median < Mode

ii) Mode < Median < Mean

iii) Median < Mean < Mode

iv) Median > Mean > Mode

h) If Median, Quartile (Q), Decile (D) and Percentile (P) are partition values then which of the following is false?

i) Median = Q_2

ii) Median = P_{50}

iii) Median = P_{25}

iv) Median = D_5

i) The Karl Pearson coefficient of kurtosis ($\beta 2$) is always ---------.

i) greater than equal to one

ii) greater than equal to zero

iii) less than equal to one

iv) none of these

j) If attributes A and B are completely disassociated then coefficient of association is -------.

i) 1 ii) 2

iii) 0 iv) –1

Q2) Attempt **any two** of the following: **[20]**

a) Define A.M., G.M. and H.M. If a & b are any two positive observations then prove that A.M. ≥ G.M. ≥ H.M.

b) Define:

i) r^{th} raw moment.

ii) r^{th} central moment.

Express the first four central moments in terms of raw moments.

c) Define Yule's coefficient of association and coefficient of colligation.

Show that $Q=\frac{2Y}{1+Y^2}$.

Q3) Attempt **any four** of the following: **[20]**

a) Define mean deviation and standard deviation.

b) State and prove minimal property of mean square deviation.

c) Discuss the effect of change of origin and scale on standard deviation.

d) With usual notations show that $\bar{X}_c=\frac{n_1\bar{X}_1+n_2\bar{X}_2}{n_1+n_2}$.

e) Derive the conditions of consistency in case of 2 attributes A and B.

f) Explain the method of finding median graphically.