



Name :
Roll No. :
Invigilator's Signature :

CS / BBA(H), BIRM, BSCM / SEM-1 / BBA-103 / 2010-11

2010-11

STATISTICS - I

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

$$10 \times 1 = 10$$

i) Which of the following method will satisfy both TRT and FRT in index number ?

- a) Laspeyre's method b) Paasche's method
c) Fisher's ideal method d) None of these.

ii) Two lines of regression are given by $x + 2y = 5$ and $2x + 3y = 8$. The values of the means of x and y are

- a) 1, 2 b) 2, 1
c) 2, 3 d) 3, 2.



- iii) Mean deviation is a measure of
- a) central tendency b) dispersion
- c) both (a) and (b) d) none of these.
- iv) If all values of a variable are equal, then its standard deviation is
- a) 1 b) 0
- c) equal value d) none of these.
- v) When one regression coefficient is negative, the other would be
- a) negative b) positive
- c) zero d) none of these.
- vi) If the first and third quartiles are 22.16 and 56.36 respectively, then quartile deviation is
- a) 17.1 b) 34.2
- c) 51.3 d) none of these.
- vii) The chart in which different categories of data are represented as percentage of 360° is called
- a) Pie diagram b) Histogram
- c) Ogive curve d) None of these.



- viii) The highest point of the frequency curve is
- a) Mean b) Median
- c) Mode d) None of these.
- ix) Due to lockout and strike the data of the time series are influenced by
- a) Trend b) Seasonal variation
- c) Cyclical variation d) Irregular variation.
- x) In the $Y = a + bX$ regression equation 'b' is
- a) intercept b) slope
- c) variable d) random variable.
- xi) The A.M. of two observations is 25 and their G.M. is 15. Their H.M. is
- a) 9 b) 7
- c) 8 d) 10.
- xii) Find x when A.M. of 7, $x - 2$ and $x + 3$ is 9.
- a) 11 b) 10
- c) 9 d) 8.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Calculate the S.D. from the following table :

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
No. of students	5	8	15	16	6

3. Construct a pie chart from the following data :

Source of revenue	Customs	Excise	Income tax	Corporation tax	Other sources
Amount (Rs. in crores)	160	450	380	110	200

4. 20 pairs of observations, the following results were obtained :

$\sum X=120$, $\sum Y=80$, $\sum X^2=1440$, $\sum Y^2=650$, $\sum XY=886$. It was found later on that the pair ($X=10$, $Y=5$) was copied wrongly, instead of the correct value ($X=11$, $Y=4$). Find the corrected value of the correlation coefficient.

5. After some period C.L.I. was increased from 110 to 200. By the same period the wage of a worker was also increased from Rs. 325 to Rs. 500. Was there may any gain for the worker ? If so find by how much.
6. The means of two samples of size 50 and 100 are 54.4 and 50.3 and standard deviations are 8 and 7s. respectively Obtain the mean and standard deviation of the sample of size 150 obtained by combining the two samples.



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) Age at death of 50 persons of a town are as follows :

80 75 78 79 66 61 68 72 73 78
 80 62 67 69 70 71 75 77 69 77
 73 71 68 70 72 76 78 80 76 75
 72 71 68 65 63 62 78 79 80 66
 62 61 78 73 77 79 78 80 63 65

Form a frequency distribution of 10 class-intervals and also show percentage frequency.

b) Given : Variance of $x = 9$, regression equations are $8x - 10y + 66 = 0$ and $40x - 18y = 214$.

Find (i) Means of x and y

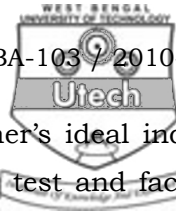
(ii) Correlation coefficient of variates and

(iii) S.D. of y .

c) For a moderately skewed distribution, mean = 172, median = 167 and S.D. = 60; find the coefficient of skewness and mode.

8. a) Draw histogram and frequency polygon from the following frequency distribution :

Wages (Rs.)	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of Workers	5	10	12	36	8	5	4



- b) From the following, prove that the Fisher's ideal index number satisfies both the time reversal test and factor reversal test :

Commodity	Base year		Current year	
	Price	Qty.	Price	Qty.
A	6	50	10	56
B	2	100	21	120
C	3	60	6	60
D	10	30	12	24

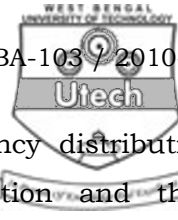
- c) Find the rank correlation coefficient for the following data of marks obtained by 10 students in Mathematics and Statistics :

Students (Roll No.)	1	2	3	4	5	6	7	8	9	10
Marks : Mathematics	80	38	95	30	74	84	91	60	66	40
Marks : Statistics	85	50	92	58	70	65	88	56	52	46

9. a) Calculate Quartile Deviation and its coefficient from the following table :

Salary (Rs.)	4-8	8-12	12-16	16-20	20-24	24-28	28-32	32-36	36-40
No. of workers	6	10	18	30	15	12	10	6	2

- b) Mr. Basu wants to invest Rs. 10,000 in one of the two companies A or B. Average return in a year from company A is Rs. 16,000 with standard deviation of Rs. 125, while in company B the average return in a year is Rs. 20,000 with standard deviation of Rs. 200. Which company will you recommend to Mr. Basu for investment ? Justify your answer.



- c) From the following cumulative frequency distribution form the general frequency distribution and then compute (i) mean, (ii) median, (iii) mode.

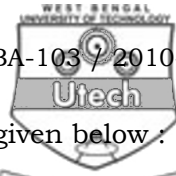
Marks	No. of students
Less than 10	3
Less than 20	8
Less than 30	17
Less than 40	20
Less than 50	22

10. a) What do you mean by cost of living index number ?
 b) Mention the uses of cost of living index number.
 c) Find C.L.I. from the following information :

Commodities	Food	Rent	Cloth	Fuel	Misc.
% expenditure	35	20	15	10	20
Price (2008)	250	60	80	50	200
Price (2009)	270	80	100	50	200

A worker used to get wages Rs. 200 per month in 2008. How much D.A. should increase to maintain the same standard of living as 2008 ?

11. a) The mean and S.D. of a sample of 100 observations were calculated as 40 and 5.1 respectively, by a student who by mistake took one observation as 50 instead of 40. Calculate the correct mean and S.D.



b) An incomplete frequency distribution is given below :

Height (inches)	5.1- 6.0	6.1- 7.0	7.1- 8.0	8.1- 9.0	9.1- 10.0	10.1- 11.0	11.1- 12.0
No. of plants	3	8	27	?	17	11	9

It is known that the median height of a plant is 8.53 inches. Calculate the missing frequency.

c) Calculate the first three central moments of the following table :

X	2	3	4	5
Y	3	2	2	3

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