Student's Roll No.		–			–			–				

ST. XAVIER'S COLLEGE
(AUTONOMOUS)

1st SEMESTER EXAMINATION
B.B.A.
NOV - DEC 2010

BUSINESS STATISTICS - I **BSTA3101**

Thursday, December 09, 2010 9:30 am to 11:30 am

Time allowed: **2 hours**

Full Marks: **50**

Instructions:

- Use fountain pen or ball-point pen of blue or black ink.
- Answer in your own words as far as practicable.
- Do not write anything on the Question paper other than your Roll No.

Answer **Question No.1** and **ANY FOUR** from the rest.

1. Answer **ANY FIVE** questions. [5x2 = 10]

   (a) Find the G.M. of 4,6,9 with weights 1,2,1 respectively.

   (b) Two variables x and y are related by $y = 7 - 5x$. If S.D of x is 0.25, find the S.D of y.

   (c) The measure of skewness for a certain distribution is 0.35. If the lower and upper quartiles are 13.67 and 26.17 respectively. Find the median.

   (d) State the essential parts of a good statistical table.

   (e) The first two moments of a distribution about the value 5 of a variable are 2 and 20. Find the mean and variance of the distribution.

   (f) The regression coefficients of y on x and x on y are -1.2 and -0.3 respectively. Find the coefficient of correlation between x and y.

   (g) Using usual notation prove that $\Delta \equiv E - 1$.

   (h) During a certain period C.L.I goes up from 110 to 200 and the salary of a worker is also raised from Rs. 3,300 to Rs.5,000. How much does he lose in real terms?

2. (a) Draw the cumulative frequency polygons (both less than and more than) from the following frequency distribution and locate graphically the median.

Marks-group	30-39	40-49	50-59	60-69	70-79	80-89	90-99	Total
No. of students	5	9	12	16	7	13	3	65

   (b) The mid-value and frequency of each class are given below. Find the values of the Lower and Upper – Quartiles.

Mid-value of the class	2.5	7.5	12.5	17.5	22.5	Total
Frequency	7	18	25	30	20	100

[6+4 = 10]

3. (a) The mean and variance calculated from a group of 80 observation are 63.2 and 25.93 respectively. If 60 of these observations have mean 64.8 and S.D. 4, find the mean and S.D. of remaining 20 observations.

   (b) For two variables x and y, prove that
   $var(ax + by) = a^2 var(x) + b^2 var(y) + 2ab\ cov(x, y)$, where a and b are two constants. [6+4 = 10]

4. (a) Find the Rank Correlation Coefficient for the following data of marks obtained by 10 students in Mathematics and Financial Accounting.

Roll No. of students	1	2	3	4	5	6	7	8	9	10
Marks in Mathematics	80	38	95	38	74	84	91	60	60	44
Marks in Financial Accounting	85	52	92	52	70	65	88	56	52	46

   (b) The A.M. of a distribution is 5 and its second and third central moments are respectively 20 and 140. Find S.D. and the third moment about 10. [6+4 = 10]

5. (a) From the following table calculate Paasche's Quantity Index Number for 2009 with 1991 as base:

Items	Quantity		value
	1991	2009	2009
A	54	250	540
B	93	75	825
C	18	56	448
D	6	8	56
E	23	47	141

(b) Derive the linear regression equation of y on x in standard form. [6+4 = 10]

6. (a) Find $f(0.5)$ using appropriate interpolation formula from the given data:

x	0	1	2	3	5	6
$f(x)$	0	7	26	63	124	215

(b) Two regression lines are given by $y = x + 7$ and $4y = 9x + 32$. Find the variance of x if the variance of y is 9. [6+4 = 10]

7. (a) Find the coefficient of variation of the following data:

x	10	20	30	40	50	60	Total
f	9	18	25	27	14	7	100

(b) If $u_1 = (12 - x)(4 + x), u_2 = (5 - x)(4 - x), u_3 = (x + 18)(x + 6), u_4 = 94$ obtain a value of x for which the third difference vanishes. [6+4 = 10]

****