Business Statistics & Mathematics
Punjab University BCOM/ADP Commerce I Paper 2013

Time: 3 Hours   **Max. Marks: 100**

Note: Attempt any five questions in all taking two questions from each section. Question No 1 is compulsory. All questions carry equal marks.

Section I

Q.1 Weight of 175 male students at a university are given in the following frequency table:

Weight	Frequency
118-126	20
127-135	35
136-144	49
145-153	32
154-162	25
163-171	14

Calculate Karl Pearson's and Bowley's Coefficient of Skewness

Q.2 Calculate weighted index number of prices for the year 2012 from the following data taking 2008 as base and using formulae recommended by: Laspeyre, Fisher, Paasche's and Marshall

Year	A		B		C	
	Price	Quantity	Price	Quantity	Price	Quantity
2008	5.0	80	3.6	90	3.1	20
2012	8.7	100	5.7	95	4.6	30

Q.3. A survey of 1600 families was conducted to observe that high and low income people send children to private and government school. The following results were obtained:

Income	School		Total
	Private	Government	
High	494	506	1000

| Low | 162 | 438 | 600 |
| Total | 656 | 944 | 1600 |

Test whether income and type of school are independent at 5% level of significance (table Value is 3.84)

Q.4. Given the six elements population 0, 3, 6, 12, 15 and 18. How many samples of size n = 3 can be drawn without replacement from this population. Form sampling distribution of sample means. Hence state and verify the relation between:

(i) Mean of the sampling distribution of the means and the population mean.

(ii) Variance of the sampling distribution of the mean and population variance.

Section II

Q.5 $If\ A = \begin{bmatrix} 1 & 3 & 5 \\ 4 & -2 & 7 \\ 3 & 2 & -4 \end{bmatrix}\ then\ obtain\ A^{-1}(Inverse\ of\ A)$

Q.6 (a) Solve for x and y
$$4x - 3y = 10$$
$$5x - 7y = 6$$
(b) The area of a rectangular plot of land fenced all round is 2000 sq. yards and the total length of fencing is 180 sq. yards. Find the length and width of plot.

Q.7 (a) Show that the sum of geometric series of ten terms:
$1. - \frac{1}{2}, \frac{1}{4}, - \frac{1}{8}, , \frac{1}{16}, - \frac{1}{32}, ...\ is\ \frac{341}{512}$
(b) A company offers two alternatives for the payment of salary for the post of a high executive. Either one may receive Rs. 240,000 per year or Rs. 100 in the first month, Rs. 200 in the second month, Rs. 400 in the third month and so on. Which of the two alternatives should be prefer.

Q.8 (a) Find the compound interest on Rs. 4500 in 3 years. If the rate of interest is 4% for the first year, 5% for the 2nd year and 6% for the 3rd year.
(b) Find the accumulated value of Rs. 5000 invested at the end of each quarter for 5 years at 8% compounded quarterly.

The End