

Business Statistics & Mathematics

Punjab University BCOM/ADP Commerce I Paper 2012

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.

Q. 1 Define any ten from the following terms: (20)

- Discrete Variable
- Median
- Standard Deviation
- Index Number
- Correlation
- Attributes
- Parameter
- Null Matrix
- Compound Interest
- Arithmetic Progression
- Linear Equation
- Discount

Section I

Q.2: Calculate mean, median and mode from the data given below:

| Marks | Frequency | Marks | Frequency |
|-------|-----------|-------|-----------|
| 1-10 | 3 | 40-50 | 15 |
| 10-20 | 9 | 50-60 | 5 |
| 20-30 | 15 | 60-70 | 2 |
| 30-40 | 30 | | |

Q.3: (a) Calculate Co-efficient of correlation and line of regression of Y on X & X on Y.

| X | Y |
|----|----|
| 18 | 17 |
| 19 | 17 |
| 20 | 18 |
| 21 | 18 |
| 22 | 18 |
| 23 | 19 |
| 24 | 19 |
| 25 | 20 |
| 26 | 21 |
| 27 | 22 |

(b) Calculation of Regression Coefficients those will be used to calculate regression lines:

Q.4: Construct index number for the year 2002 from the following data taking 2001 as base year using:

(i) Laspeyre's (ii) Paasche's (iii) Fisher's Method

| Article | 2001 | | 2002 | |
|---------|-------|----------|-------|----------|
| | Price | Quantity | Price | Quantity |
| A | 10 | 25 | 9 | 2 |
| B | 13 | 21 | 12 | 22 |
| C | 4 | 10 | 3 | 14 |
| D | 8 | 12 | 6 | 16 |

Q.5: A population consist of six numbers, 6, 9, 12, 18, 21. Consider all possible samples of size 3 which can be drawn without replacement. Find:

a. Mean and standard derivation of population.

b. Mean & standard deviation of sampling distribution of sample means & verify that:

(i) $\mu_{\bar{x}} = \mu$

(ii) $\sigma_{\bar{x}}^2 = \frac{\sigma^2}{\sqrt{n}} \sqrt{\frac{N-n}{N-1}}$

Section-II

Q.6:

If $A = \begin{bmatrix} 3 & 4 & 2 \\ 1 & 5 & 1 \\ 2 & 1 & 2 \end{bmatrix}$ $B = \begin{bmatrix} 3 & 5 & 2 \\ 4 & 1 & 3 \\ 5 & 3 & 1 \end{bmatrix}$

Prove that $AB \neq BA$

Q.7: a. Solve for X $\frac{X-3}{X+3} = \frac{X+1}{X+5}$

b. Solve $3x^2 + 6x + 2 = 0$ by Quadratic formula.

Q.8: a. The difference of two number is 4. Twice the first number plus three times the second equal 28. Find the two numbers.

b. Sum up the series $3 + 33 + 333 + \dots$ to 6 terms.

Q.9: a. A sum of money was borrowed and paid back in two installments of Rs. 882 allowing 5% compound interest. What was the sum borrowed.

b. A property changed hands four times and each time the loss to the seller was 10%. If in the last transaction the loss was 729, find out the original value of the property.

The End