# University of the Punjab
## Part I Annual 2017          Examination ADC/BCOM
## Subject: Business Statistics & Mathematics
## Paper: BC: 301
## Time Allowed: 3 Hours          Maximum Marks: 100

### Composed by Iftikhar Ali Lecturer Statistics, Finance & Accounting

*NOTE: Attempt any FIVE questions using proper method. All questions carry equal marks. Attempt at least TWO questions from each section.*

## https://bcfeducation.com
## Section I

**Q.1** Calculate Arithmetic Mean, Median, Mode and Coefficient of variation.

| Groups Rs. | Frequency | Groups Rs. | Frequency |
|---|---|---|---|
| 0-7 | 5 | 28-35 | 18 |
| 7-14 | 13 | 35-42 | 13 |
| 14-21 | 18 | 42-49 | 5 |
| 21-28 | 28 | | |

**Q.2:** Calculate Coefficient of Correlation and also the line of regression y on x

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

**Q.3** Calculate price index numbers using Laspeyre's, Paasche's, Fisher and Marshall's formula for 2001 taking 2000 as base year from the following data:

| Commodity | 2000 | | 2001 | |
|---|---|---|---|---|
| | Price | Quantity | Price | Quantity |

| Wheat | 12 | 10 | 15 | 12 |
|-------|----|----|----|----|
| Rice | 15 | 7 | 20 | 5 |
| Jawar | 24 | 5 | 20 | 9 |
| Maize | 5 | 16 | 5 | 14 |

**Q.4. The table of hair colours and eye colours of 2000 persons is given below:**

| Eye Colour | Hair Colour | | | |
|------------|-------------|-----------|-------|-------|
| | Light Black | Dark Black | Brown | Total |
| Blue | 26 | 21 | 13 | 60 |
| Black | 25 | 42 | 21 | 88 |
| Brown | 19 | 18 | 15 | 52 |
| Total | 70 | 81 | 49 | 200 |

Test the hypothesis that hair color and eye color are independent. The table value of Chi-square at 4 degree of freedom at 5% level of significance is 9.49.

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## Section II

**Q.5:** *If* $A = \begin{bmatrix} 2 & -3 & 4 \\ 1 & 5 & -2 \\ 4 & 2 & 6 \end{bmatrix}$ *and* $B = \begin{bmatrix} 1 & -2 & 3 \\ 4 & -5 & -6 \\ 7 & 8 & 9 \end{bmatrix}$

**Q.6: (a)** Solve the following Quadratic Equation:
$$2x^2 + 15x + 18 = 0$$
**(b)** The difference of two numbers is 33. The larger number is one more than three times the smaller number. Find the numbers.

**Q.7: (a)** The sum of 10 terms of an A.P., whose last term is 28, is 145. Find the first term and the common difference.
**(b)** Find the sum of the series:
$1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16} \ldots \ldots$ to infinity cannot exceed 2.

**Q.8:** Find out the effective rate of interest equivalent to the nominal rate of 8% p.a. Compounded quarterly.