University of the Punjab
Part I Annual 2023 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.

Section I

Q.1. Following data shown the marks of sample of students from two sections of 10th Class. (20)

Marks Sec. A	50	40	46	70	82	88	62	94	100
Marks Sec. B	70	62	84	72	42	34	68	34	78

Which section is consistent in performance?

Q.2. Given the following data: (20)

X	0	1	3	4	5
Y	36	25	33	15	28

a) Determine least square line taking x as independent variable.
b) Find trend values and show that:
(i) $\sum y = \sum \hat{y}$
(i) $\sum (y - \hat{y}) = 0$
c) **Verify that** $\sum (y - \hat{y}) = \sum y^2 - a\sum y - b\sum xy$

Q.3. A pair of fair die is rolled. Find the probability that sum of dots on the upper sides is: (20)
(i) Less than six
(ii) Odd number
(iii) Less than 6 or odd number

Q.4. A population consists of five values 2, 4, 6, 8,10. Take all possible sample of size 2 from this population without replacement. Find
(i) Mean and variance of the population

(ii) Mean and unbiased variance of each sample
(iii) Average of the means of all possible samples and average of the variances of all samples. (20)

Section II
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Q.5. (a) Solve the following equation: (10)

$\frac{5}{9}(7-6x)-\frac{3}{4}(3-15x)=\frac{1}{12}(3x-5)-\frac{1}{2}$

(b) Solve $4x^2+20=18+35x$ by using method of completing square. (10)

Q.6. Solve the following system of equation by matrices: (20)

$x+y+z=4$
$x-y+2z=3$
$2x+3y-z=1$

Q.7. (a) The 54^{th} and 4^{th} terms of an A.P are 61 and 64 respectively. Show that the common difference in -5/2 and 23^{rd} term is 16.5 (10)

(b) The sum of three numbers in G.P is 26 and their product is 216. Find the numbers. (10)

Q.8. (a) How long will it take for Rs. 20250 amount to Rs. 30500 at 10.5% interest rate. (10)

(b) Find out compound amount and compound interest at the end of 3 years on a sum of Rs. 20,000 borrowed at 6% compounded annually. (10)