

University of the Punjab
Part I 2019 2nd Annual 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.

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Section I

Q.1: The following data show last week daily sales in thousands of dollars of two departmental stores:

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Store A	63	79	84	99	54	71
Store B	88	73	45	55	65	64

- (i) Calculate Mean and Standard Deviation of each store sales.
- (ii) Which store performance is better in sales?
- (iii) Which store performance is more consistent with respect to sales?

Q.2: The following figures show the expenditure on advertisement (X) and net income (Y) for a random sample of 10 business firms. All figures are measured in thousands of dollars.

X	13	17	29	28	40	37	41	26	24	35
Y	15	21	18	14	22	23	24	16	17	20

Compute:

- (i) Mean Value of X and Y
- (ii) Standard deviation of X and Y
- (iii) Coefficient of Correlation between X and Y
- (iv) The line of regression Y on X

- (v) The mean value of Y given that X = 30

Q.3: (a) Two fair dice are rolled. Let X denotes the sum of dots appearing on the upper faces of the two dice, find the probability distribution of X.

(b) The prices and quantities of three commodities during 1997 and 2007 are given below:

Commodity	Price		Quantities	
	1997	2007	1997	2007
A	12	10	501	600
B	38	50	100	194
C	40	40	56	76

Compute Fisher's ideal price index number for 2007 on the basis of 1997.

Q.4: The following table is based on the GPA's (grade point averages) of a sample of 300 students selected from all classes taught by all instructor during the past four years and how these students evaluated this instructor.

Evaluation of the Instructor	GPA of the Students		
	Below 2.5	2.5 to 3.5	Above 3.5
Excellent	18	33	37
Good	17	27	43
Average	21	31	23
Poor	25	14	11

Test at the 1% significance level If GPAs of students and instructor evaluations are dependent.

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Section II

Q.5:

(a) Solve the following equation:

$$4x^2 + 20 = 18 + 35x$$

(b) The product of one less than a certain positive number and 2 less than three times the number is 16. Find the number.

Q.6: If $A = \begin{bmatrix} 1 & 3 & 5 \\ 4 & -2 & 7 \\ 3 & 2 & -4 \end{bmatrix}$ then obtain A^{-1}

Q.7: (a) A company earned a profit of \$ 37,000 in its first year of operation. It is estimated that the profit will increase by \$ 7000 each year, find the total profit of first ten years of operation.

(b) Express 0.7272727272 as a quotient of two integers using the Idea of Infinite geometric series.

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Q.8: (a) Find out the compound amount and compound interest at the end of 5 years on a sum of Rs. 50,000 borrowed at 8% compounded annually.

(b) A machine depreciates 20 percent in the first year, then by 10 per cent per annum for the next 5 years and by 2 percent per annum thereafter. Find its value after 7 years if its Initial price is Rs. 720,000,

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