

Vidya Vikas Mandal's

Shree Damodar College of Commerce & Economics, Margao-Goa

SY BBA, Term – VII Term End Assessment, March 2024

Course: BBCB032 Business Statistics -II

Duration: 90 Mins

Maximum Marks: 25

Instructions:

- 1) Start each question on a fresh page.
- 2) Figures to the right indicate maximum marks.
- 3) Use of non-scientific, non-programmable calculators is allowed.

- Q1. Mr David is a team leader of a Multi-National Company. His annual income and investment for the last six years is given in the following table. (05)

Year	2017	2018	2019	2020	2021	2022
Income (In Lakhs)	4.4	4.8	5.2	5.7	5.9	6.0
Investment (In Lakhs)	1.4	1.8	2.2	2.8	3.0	3.4

Calculate Karl Pearson's Coefficient of Correlation and explain the type of correlation between the two quantities.

- Q2. A Multi -National company wants to study the relationship between sales and advertising expenditure. A considerable amount of the advertising budget is spent on television commercials and the balance goes to print media advertising. The following data is from eight randomly selected sales periods: (05)

Y	X ₁	X ₂
180	3	5
220	4	10
150	2	8
230	5	12
209	4	11
186	3	10
250	5	12
172	2	8

Y = sales in Rs. Lakhs

X₁ = Magazine advertising in Rs. Lakhs

X₂ = Television commercials in Rs. Lakhs.

Obtain the regression equations.

- Q3. Calculate trend values by the method of least squares for the following data relating to NPA's of a Co-operative Bank. Also estimate NPA for the year 2009. (05)

Year	2000	2001	2002	2003	2004	2005	2006	2007
NPA's in Lakhs	54	79	78	65	69	94	100	87

- Q4 A To assess the significance of possible variation in performance among four JEE training centres in Margao, a common test was given to a number of students (05)

taken at random from these four centres and the results were given below.
Apply ANOVA for testing the variation in performance among the four training centres.

A	B	C	D
8	12	18	13
10	11	12	9
12	9	16	12
8	14	6	16
7	4	8	15

Tabulated value of $F(0.05, 3, 16) = 3.24$

OR

- Q4 B** A factory operates in three shifts. The following table gives the number of good and defective parts produced by each of the three shifts in the factory. A production manager wants to test if the number of defective parts produced depends on the production shift. He compiles the following data related to parts and the shift from which they come. Is there any association between the shift and the quality of parts produced? [$\chi^2(0.05, 2) = 5.991$]

Shift	Good Parts	Defective Parts	Total
Day	70	20	90
Evening	60	15	75
Night	70	15	85
Total	200	50	250

- Q5 A** In a certain Examination, 10 students obtained the following marks in Business Statistics (BS) and BRM. Find Spearman's rank correlation coefficient and interpret the results. (05)

BS	70	60	82	48	32	65	40	88	73	64
BRM	85	42	75	68	45	63	58	90	62	60

OR

- Q5 B** Using Mann Whitney U Test, test the hypothesis that the median HDL cholesterol levels in adult population of city A and city B are the same. Given that $U(7, 5, 0.05) = 5$. (05)

City A	42	20	51	39	57	60	23
City B	30	42	25	29	35		
