Course Code	**:**	**BECS-184**
Course Title	**:**	**Data Analysis**
Assignment Number	**:**	**BCA_NEW/BCAOL(V)184/Assign/2026-27**
Maximum Marks	**:**	**100**
Last Date of Submission	**:**	**31st October, 2026 (For July 2026 Session)**
	:	**30th April, 2027 (For January 2027 Session)**

Note: Answer the following questions. Each question carries 20 marks

Part-I

(2 × 20 = 40 Marks)

Q1: The following table presents the list of agencies owning different number of rental cars. The annual income for each of these agencies is given here.

Agency	Cars (in ten thousand)	Revenue (in Rs Crores)
A	63.0	7.0
B	29.0	3.9
C	20.8	2.1
D	19.1	2.8
E	13.4	1.4
F	8.5	1.5

(a) The study wanted to analyse whether there is any significant relationship between the number of rental cars that the agency owns and its annual income. Compute the correlation coefficient from the given table.

(b) Test the significance of the correlation coefficient considering $\alpha=0.05$ and critical values obtained from t-distribution table is ± 2.776.

Q2: Explain the term 'qualitative research design'. How it is different from quantitative research design? What are the various techniques of qualitative research design?

Part-II

(5 × 12 = 60 Marks)

Answer the following questions. Each question carries 12 marks.

Q3: Differentiate between Census and Survey data. What are the various stages involved in planning and organizing the censuses and surveys?

Q4: Explain the following:

a. Multivariate analysis
b. Coefficient of variation
c. Data mining
d. Normal distribution curve

Q5: What are the characteristics of a good questionnaire? Suppose you have to conduct a study in village to assess the effectiveness of a recent government scheme. Prepare a questionnaire with atleast 10 questions to conduct this study.

Q6: What do you mean by the term 'Composite index'? State with illustration the procedure to work out composite index by simple ranking method.

Q7: Differentiate between:

a. t test and f test
b. Phenomenology and Ethnography
c. Point estimate and interval estimate
d. ANOVA and MANOVA

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Answer

The two variables are the number of rental cars held by each agency (X, in units of ten thousand cars) and its annual revenue (Y, in rupees crores). Pearson's product-moment correlation measures the direction and strength of their linear association. Since both are numerical variables recorded for the same six agencies, this coefficient is appropriate for the question. We retain the given units throughout: multiplying one variable by a positive conversion factor would not change the correlation.

(a) Calculation of the correlation coefficient. For n = 6 agencies, the paired observations are A (63.0, 7.0), B (29.0, 3.9), C (20.8, 2.1), D (19.1, 2.8), E (13.4, 1.4), and F (8.5, 1.5). The working sums are: $\Sigma X = 153.8$, $\Sigma Y = 18.7$, $\Sigma X^2 = 5859.26$, $\Sigma Y^2 = 80.67$, and $\Sigma XY = 682.77$. These are obtained by squaring each X and Y value and multiplying the corresponding X and Y observations before summation.

The formula is $r = [n\Sigma XY - (\Sigma X)(\Sigma Y)] / \sqrt{\{[n\Sigma X^2 - (\Sigma X)^2][n\Sigma Y^2 - (\Sigma Y)^2]\}}$. Substituting the observed values, the numerator is $6(682.77) - 153.8(18.7) = 4096.62 - 2876.06 = 1220.56$. The first denominator factor is $6(5859.26) -$