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BCS–040

BACHELOR OF COMPUTER APPLICATIONS

(BCA–REVISED)

Term-End Examination

June, 2025

BCS-040 : STATISTICAL TECHNIQUES

Time : 2 Hours *Maximum Marks : 50*

Note : *(i) Attempt both Sections (Section A and Section B).*

*(ii) Attempt any **four** questions from Section A.*

*(iii) Attempt any **three** questions from Section B.*

(iv) Use of non-scientific calculator is allowed.

Section—A

1. With the help of a suitable example, describe the term 'Probability Distribution'. How does the Binomial distribution differ from the Poisson's distribution ? 5

2. Construct Model ANOVA table for one-way classification. 5

3. From a population of 200 observations, a sample of n = 50 is selected. Calculate the standard error; if the population standard deviation equals 22. 5

4. Calculate an estimate of median for the following data : 5

Class	Frequency
0—24.9	6
25—49.9	11
50—74.9	14
75—99.9	16
100—124.9	13
125—149.9	10

5. In order to find the correlation coefficient between two variables X and Y from 20 pairs of observations, the following calculations were made : 5

$\Sigma X = 15$, $\Sigma Y = -6$, $\Sigma XY = 50$, $\Sigma X^2 = 61$ and $\Sigma Y^2 = 90$.

Calculate the correlation coefficient and the slope of the regression line of Y on X.

6. Compare and contrast Random Sampling with Non-random Sampling. Briefly discuss the methods involved in selection of any simple random sampling. 5

Section—B

7. Describe the following tests in detail : 5+5

(a) Paired *t*-test

(b) Chi-square test for independence of attributes

8. The following table summarizes a sample showing the level of education and marriage adjustment score for married persons : 10

		Marriage Adjustment Score		
Level of Education		Low	High	Very High
	Middle School	25	5	10
	High School	50	30	40
	College	120	60	60

Can you calculate from the above, the higher the level of education, the greater is the degree of adjustment in marriage ?

(Given : $\chi^2_{(4,\ 0.05)} = 9.488$).

9. What do you understand by the term 'time series' ? Discuss all the categories in which time series is classified (in **100** words each). 10

10. In a partially destroyed laboratory record of an analysis of correlation of data, only the following results are legible : 10

Variance of $x = 9$,

Regression equations :

(i) $8x - 10y + 66 = 0$

(ii) $40x - 18y - 214 = 0$

What were (a) the means of x and y, (b) the coefficient of correlation between x and y, and (c) the standard deviation of y ?

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