

**BACHELOR OF COMPUTER
APPLICATIONS
(BCA) (REVISED)**

**Term-End Examination
December, 2025**

BCS-040 : STATISTICAL TECHNIQUES

Time : 2 Hours

Maximum Marks : 50

Note : (i) *Attempt both Sections i. e., 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. Explain the term 'probability distribution'.
How does Binomial distribution differ from
Poisson distribution ? 5

2. Given the following sample of 10 numbers :
12, 41, 48, 58, 14, 43, 50, 59, 15, 45
 - (a) Compute Mean, Variance and Standard
Deviation. 3

 - (b) If the largest value in the above set of
numbers is changed to 500, to what
extent are the mean and variance
affected by the change ? Justify your
answer. 2

3. A Mathematics professor has given five
tests. A student scored 70, 75, 65, 80 and 95
respectively in the five tests. The professor
decides to determine his grade by randomly
selecting a sample of 3 test scores. Construct
the sampling distribution for this process. 5

4. Write *two* merits and *two* demerits of median. Given the frequency distribution as follows : 5

C. I.	Frequency
10—20	12
20—30	30
30—40	34
40—50	65
50—60	46
60—70	25
70—80	18

Find the median value.

5. Differentiate between the linear systematic sampling and circular systematic sampling. 5
6. Write short notes on the following : 5
- (a) F-test for equality of two variances
 - (b) Chi-square test for independence of attributes

Section—B

7. The following table shows the sample value of 3 independent normal random variables X_1 , X_2 and X_3 . Assuming that they have equal variances, test the hypothesis that they have the same mean by using ANOVA (Given $F_{(2, 9)}(0.05) = 4.26$) : 10

X_1	X_2	X_3
13	16	15
11	8	12
16	21	25
22	11	10

8. What do you understand by forecasting ? How is forecasting related to future planning ? Give suitable example in support of your answer. Briefly discuss any forecasting model. 10

9. An IT company wants to estimate how its monthly costs are related to its monthly output rate ? For that the firm collects a data regarding its costs and outputs for a sample of nine months as given below :

10

Output (tons)	Production Cost (in thousands of dollars)
1	2
2	3
4	4
8	7
6	6
5	5
8	8
9	8
7	6

- (a) Calculate the best linear regression line.
- (b) Use this regression line to predict the firm's monthly costs if they decide to produce 4 tons per month.

10. Differentiate between the following : 10

- (a) Z-test and *t*-test
- (b) Correlation and Regression

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