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**BCS-040**

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

**Term-End Examination  
December, 2025**

**BCS-040 : STATISTICAL TECHNIQUES**

*Time : 2 Hours*

*Maximum Marks : 50*

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**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.*

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**B-1038/BCS-040**

**P. T. O.**

**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 :

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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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