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BCS–040

BACHELOR OF COMPUTER APPLICATIONS (BCA)

(REVISED)

Term-End Examination

December, 2024

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. The Government has conducted a survey of road accidents. In this study the data of accidents of a particular road for the last 50 weeks were compiled. This data is grouped into a frequency distribution as follows :

No. of Accidents	No. of Weeks
0—5	8
5—10	20
10—15	12
15—20	8
20—25	2

Draw a histogram and calculate average number of accidents per week. 5

2. State additive law of probability. The probability that Rahul passes BCS-040 exam is 2/5 and the probability that Meena

passes the same exam is 1/3. Find the probability that Rahul or Meena would pass the exam. 5

3. Write the probability mass function of binomial distribution. If the probability of hitting a target is $\frac{1}{5}$ and 5 shots are fired independently, what is the probability that the target hit twice ? 5

4. The sales of milk (in litre) of a dairy in a week is given as follows :

Day	Sales (in litre)
Monday	500
Tuesday	400
Wednesday	450
Thursday	500
Friday	600
Saturday	700
Sunday	500

Find the moving average of length 3. Also plot the data and moving average. 5

5. The table below gives the marks obtained by BCA students in BCS-040 :

Marks	No. of Students
0—10	10
10—20	5
20—30	20
30—40	10
40—50	05

Calculate mean and standard deviation. 5

6. What are the advantages of sample survey over population survey ? Write a short note on systematic sampling. 5

Section–B

7. A Computer Engineer identifies three methods (A, B and C) to do a certain job. The engineer

assigns each method to 5 operators and note-downs the time of completion of job by each operator (in minutes) in the following table :

A	B	C
19	16	17
17	20	20
21	23	20
18	21	15
20	19	18

Construct the relevant analysis of variance (ANOVA) table and test the hypothesis that the average time of each method is same at 5% level of significance. (Given $F_{(2, 12)} = 3.885$). 10

8. Explain the concept of forecasting, in context of statistics. Also, discuss any *one* of the forecasting model with suitable example. 10

9. The following contingency table presents the analysis of 300 persons according to hair colour and eye colour :

		Eye Colour		
		Blue	Gray	Brown
Hair Colour	Fair	30	10	40
	Brown	40	20	40
	Black	50	30	40

Test the hypothesis that there is no association between hair colour and eye colour at 5% level of significance. (Given $\chi^2_{(4),0.05} = 9.49$). 10

10. Write short notes on any ***two*** of the following : 10

(a) Stratified random sampling

(b) Control charts

(c) *t*-test for mean

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