

Reg. No.



BCACACN 502

**Fifth Semester B.C.A. Degree Examination, December 2023/January 2024
(NEP 2020) (2023 – 24 Batch Onwards)
STATISTICAL COMPUTING AND R PROGRAMMING (DSCC)**

Time : 2 Hours

Max. Marks : 60

Note : 1) Answer **any six** questions from Part – **A** and **one full** question from **each** Unit of Part – **B**.
2) Scientific calculator is **allowed**.
3) **Statistical chart** will be provided by the college.

PART – A

$$(6 \times 2 = 12)$$

1. a) If $\text{baz} < - \text{c}(1, -1, 0.5, -0.5)$ and $\text{qux} < -3$, find the value of $\text{baz} + \text{qux}$.

b) How do you count the number of individual characters in a string ? Give an example.

c) What is purpose of `switch ()` function in R ? Give example.

d) Define median. Determine the median for the numbers 2, 4, 8, 4, 6, 2, 7, 8, 4, 3, 8, 9, 4, 3, 5.

e) What is an experiment and event ? Give example.

f) List the characteristics of normal distribution.

g) What is hypothesis ? Give an example.

h) What are the uses of Regression analysis ?

PART – B

Unit - I

2. a) Explain rep and length functions on vectors with example.
b) How do you create arrays in R ? Explain with suitable example.
c) Explain Is-Dot Object-Checking functions with an example. (4+4+4)

P.T.O.



3. a) How do you create matrix in R ? Explain with its necessary attributes ? Give an example.
- b) Explain sub and gsub functions on strings with an example.
- c) Explain any four graphical parameters used in plot function in R with example. (4+4+4)

Unit – II

4. a) How do you read external data files into R ? Explain any two types of files with necessary commands to read their characters into R, with example.
- b) Explain while loop in R with syntax and example.
- c) How do you draw barplot and pie chart in R ? Explain with example. (4+4+4)
5. a) What do you mean by argument matching to function in R programming ? Explain any three of them.
- b) What is exception handling ? How do you catch errors with try statements ? Explain with example.
- c) What is “masking” in R ? Explain two most common masking situations in R, with example. (4+4+4)

Unit – III

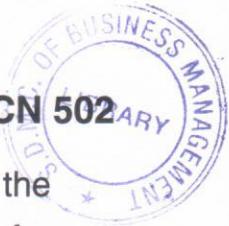
6. a) Explain four types of Data and Measurement Scales with example.
- b) Determine the mean, the variance and the standard deviation of the following discrete distribution.

<u>x</u>	<u>P(x)</u>
1	.238
2	.290
3	.177
4	.158
5	.137

- c) Compute the 35th percentile, the 55th percentile, Q1, Q2 and Q3 for the following data.

16 28 29 13 17 20 11 34 32 27 25 30 19 18 33.

(4+4+4)



7. a) A data set contains the following seven values. 6, 2, 4, 9, 1, 3, 5. Find the range, population variance, population standard deviation and z score for the element 9.
- b) The following data represent the costs (in dollars) of a sample of 30 postal mailings by a company.

3.67	2.75	9.15	5.11	3.32	2.09
1.83	10.94	1.93	3.89	7.20	2.78
6.72	7.80	5.47	4.15	3.55	3.53
3.34	4.95	5.42	8.64	4.84	4.10
5.10	6.45	4.65	1.97	2.84	3.21

Using dollars as a stem and cents as a leaf, construct a stem-and-leaf plot of the data.

- c) A Gallup survey found that 65% of all financial consumers were very satisfied with their primary financial institution. Suppose that 25 financial consumers are sampled and if the Gallup survey result still holds true today, what is the probability that exactly 19 are very satisfied with their primary financial institution ? (Using Binomial Distribution). **(4+4+4)**

Unit – IV

8. a) A random of sample size 20 is taken resulting in sample mean of 25.51 and a sample standard deviation of 2.1933. Assume data is normally distributed use this information and $\alpha = 0.05$ to test the following hypothesis.

$$H_0 : \mu = 25 \text{ pounds}$$

$$H_a : \mu \neq 25 \text{ pounds}$$

- b) Explain types of Correlation with example. **(6+6)**



9. a) Suppose a stock market investor is interested in determining whether there is a significant difference in the P/E (price to earnings) ratio for companies from one year to the next. Assume $\alpha = .01$. Assume that differences in P/E ratios are normally distributed in the population. ($n = 9$)

Company	Year 1 P/E Ratio	Year 2 P/E Ratio
1	8.9	12.7
2	38.1	45.4
3	43.0	10.0
4	34.0	27.2
5	34.5	22.8
6	15.2	24.1
7	20.3	32.3
8	19.9	40.1
9	61.9	106.5

- b) Compute the regression equation of y on x from the following data.

(6+6)

X	2	4	5	6	8	11
Y	18	12	10	8	7	5