

Time: 10.00am To 12.30pm

Q. 4. Answer the following in detail. (Solve any 6) (30)

1. Explain control structures in R (if, if-else, switch).
2. Explain different types of loops in R with examples.
3. Explain list operations in R with examples.
4. Explain matrix operations in R such as addition, multiplication, and transpose.
5. Write an R program to find the maximum and minimum elements in a vector.
6. Explain correlation and covariance in R with example.
7. Differentiate Matrix and list with example.

Q. 5. Answer the following in detail. (Solve any 1) (10)

1. **Explain data preprocessing in R. Discuss:** Handling missing values, Data normalization, Data transformation, Data filtering with examples.
 2. **Explain packages in R. Describe:** Installing packages, Loading packages, Updating and removing packages, Importance of CRAN.
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