| Reg. No. | | | | | | | | | | | | | | | |
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| Question Paper Code | 12888 |
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**B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024**

Third Semester

**Electronics and Communication Engineering**

**20ECPW301 – R PROGRAMMING WITH LABORATORY**

Regulations - 2020

Duration: 3 Hours Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

| | | Marks | K – Level | CO |
|---|---|---|---|---|
| 1. | Write a R program to take input from the user (name and age) and display the values. Also print the version of R installation. | 2 | K1 | CO1 |
| 2. | Demonstrate the simple 3X3 matrix. | 2 | K2 | CO1 |
| 3. | Illustrate the concept of recycling with appropriate examples. | 2 | K2 | CO2 |
| 4. | Infer the output for floor (-3.5) and ceiling (-3.5). | 2 | K2 | CO2 |
| 5. | Illustrate the R code to integrate the function f(x) = x^3. | 2 | K2 | CO3 |
| 6. | Differenciate Covariance and Correlation. | 2 | K2 | CO3 |
| 7. | Show the purpose of using ANOVA test. | 2 | K1 | CO4 |
| 8. | How to create generalized linear model in R? | 2 | K1 | CO4 |
| 9. | State the use of window () function. | 2 | K1 | CO5 |
| 10. | Outline the syntax to read and write files in R. | 2 | K2 | CO5 |

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

| | | | Marks | K – Level | CO |
|---|---|---|---|---|---|
| 11. | a) | Investigate the use of the function unclass() with a factor argument. Comment on its use in the following code:<br>> par(mfrow=c(1,2), pty="s")<br>> plot(weight ~ volume, pch=unclass(cover), data=allbacks)<br>> plot(weight ~ volume, col=unclass(cover), data=allbacks)<br>> par(mfrow=c(1,1)) | 13 | K2 | CO1 |
| | | **OR** | | | |
| | b) | Create the following matrix, which stores the name and suit of every card in a card deck.<br>## [,1] [,2]<br>## [1,] "ace" "spades"<br>## [2,] "king" "spades"<br>## [3,] "queen" "spades"<br>## [4,] "jack" "spades"<br>## [5,] "ten" "spades" | 13 | K2 | CO1 |

12. a) Explain in detail with R code for the following *13 K2 CO2*
(i) Calling a function with default arguments.
(ii) Calling a function with arguments.
(iii) Calling a function without arguments.

**OR**

b) Illustrate the different Boolean operators in R with examples. *13 K2 CO2*

13. a) Point out the function which is used for the conversion of covariance to correlation in R. Explain the function with syntax. *13 K2 CO3*

**OR**

b) Write the R code to generate the class of Markov's chain process and the state diagram for two products assumed. *13 K2 CO3*

14. a) Explain Normal Distribution and Binomial Distribution with suitable examples. *13 K2 CO4*

**OR**

b) Compare and contrast any two methods of survival analysis methods with appropriate mathematical models. *13 K2 CO4*

15. a) Explain briefly about R function used in ggplot with suitable examples. *13 K2 CO5*

**OR**

b) Make use of suitable R functions and show graphically different plots in R. Give the syntax of each with examples. *13 K2 CO5*

## PART - C (1 × 15 = 15 Marks)

16. a) Discuss briefly about R code for Supervised and Unsupervised learning. *15 K2 CO6*

**OR**

b) List the different types of clustering. Write about k-NN algorithm. Write a R script to cluster the mtcars dataset using k-NN algorithm. *15 K2 CO6*