



K20U 1555

Reg. No. :

Name :

**V Semester B.Sc. Degree (CBCSS-Reg./Sup./Imp.) Examination,
November 2020
(2014 Admn. Onwards)
Core Course in Statistics
5B07STA : STATISTICS USING R**

Time : 3 Hours

Max. Marks : 48

Instruction : Use of calculators and statistical tables are **permitted**

PART – A

Short answer. Answer **all** the **6** questions. (6×1=6)

1. Explain matrix function in R.
2. What is the output of the R command $((2 + 3)^2)^2$?
3. If $X \sim N(2, 3)$, where 3 is the standard deviation, what is the R command for finding $P(X \leq 2.8)$?
4. If X follows an exponential distribution with parameter $\lambda = 10$ then write down the R command for finding $P(X > 4)$.
5. Write down the R command for finding a random sample of size 10 from a population of size 100 with replacement.
6. Explain the output of the R command `r norm (50)`.

PART – B

Short essay. Answer **any 7** questions. (7×2=14)

7. Explain how will you create a dataframe in R.
8. Write down the R command for drawing a histogram and explain its arguments.
9. Write down the R command for simulating 100 observations from an exponential distribution with parameter $\lambda = 2$. Discuss the output of the command `shapiro.test` for the generated data.
10. Give the R commands for drawing box plot and normal Q-Q plot in R.

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11. Briefly describe the installation of new packages in R.
12. Write a short note on scatter diagram and what is the R command to draw it.
13. Distinguish between t-test and paired t-test and how will you conduct it in R.
14. How will you set the null hypothesis in Chi-square test of independence of attributes? If the p-value is 0.7655 what is your interpretation?
15. Explain the arguments in the command `var.test()` in R.

PART - C

Essay. Answer **any 4** questions.

(4×4=16)

16. Explain correlation analysis and if the output of the command `cor(x, y)` is 0.9, what will be your interpretation?
17. Write a short note on objects and their classes.
18. Explain briefly about comparison operators in R.
19. How will you conduct inverse transform method in R?
20. Briefly describe how to conduct one way anova in R.
21. Write an R program for finding confidence interval for the population mean μ assuming that the sample is drawn from $N(\mu, \sigma^2)$ and σ^2 is known.

PART - D

Long essay. Answer **any 2** questions.

(2×6=12)

22. Distinguish between the commands for finding Pearson's correlation coefficient and Spearman's rank correlation coefficient and testing their significances.
23. Justify R as a statistical software and language.
24. a) If $X \sim \text{exp}(3)$, write down the R command for finding the following probabilities.
 - i) $P(X \geq 0)$
 - ii) $P(2 < X < 3)$b) If $X \sim B(2, 0.4)$, write down the R command for finding $P(1 \leq X \leq 2)$.
25. Write down the R program for finding the interval estimate of the difference of two population means assuming normality and the population standard deviations are unknown but equal and the sample sizes are small.