|  |  |
| --- | --- |
| **Reg. No. of Student** |  |

# Examination Question Paper

|  |  |  |  |
| --- | --- | --- | --- |
| **Faculty** | **H A S Shri Kishore** | | |
| **Examination** | **Semester End Examination December 2022** | | |
| **Programme** |  | **Department** |  |
| **Semester / Year** |  | **Batch** |  |
| **Course Code** |  | | |
| **Course Title** | **Introduction To R** | | |

**INSTRUCTIONS TO STUDENTS:**

1. Sections 1-3 are compulsory
2. Answer any TWO full questions in section 4

**Total Duration: 1.5 Hours Maximum Marks: 50**

**IMPORTANT:**

You may retain the question paper for future reference

|  |  |  |  |
| --- | --- | --- | --- |
| **Section 1** | | | |
| **Q. No.** | **Question** | **Marks** | **C.O.** |
| 1 | You have been given a list of heights of all your classmates. You will calculate the average height of your class by using the \_\_\_\_\_\_\_ function in R. a. mean b. average c. median d. Mean | **1** | 1,3 |
| 2 | What is a facet in ggplot2? a. The face of the plot b. Splitting the plot into multiple panels using a column of the data c. Factors of the plot | **2** | 4 |
| 3 | How many windows do you see in R studio by default? a. 1 b. 2 c. 3 d. 4 | **1** | 1 |
| 4 | What does the statement a <- 2 do? Select all that apply. a. Comparing a and 2 b. Creating a variable named a c. Creating a numeric variable d. Setting the value of a to 2 | **2** | 1,2 |
| 5 | When working with R markdown, the working directory is always the directory in which the markdown file (.Rmd) is stored. a. True b. False | **1** | 1,2 |
| 6 | Which of the following are valid ways to get help on functions (say var) in R? Select all that apply. a. ?var b. ??var c. search for the keyword "var" in the help section d. help var | **2** | 1,2 |
| 7 | List any three atomic data types in R | **1.5** | 2 |
| 8 | What is the delimiter used in the function read\_csv? a. Comma b. Semicolon c. Space d. Hyphen | **1** | 3 |
| 9 | Which of the following is NOT a valid way to index from the list below: la <- c(eleName = c(1,2,3), c(“a”)) a. la[1] b. la[[1]] c. la[[“eleName”]] d. la(2) | **1.5** | 2 |
|  |  |  |  |
| **Section 2** | | | |
| Go through the code and answer the following questions  f6 <- function(x) {  y <- numeric(length(x))  for (i in 1:length(x)) {  y[i] <- min(x)  x <- x[-which(min(x))]  }  return(y) } | | | |
| **Q. No.** | **Question** | **Marks** | **C.O.** |
| 10 | What can be the datatype of x? Select all that apply a. Numeric b. Character c. Logical d. Integer | **2** | 1 |
| 11 | Which data structure can x be? a. Vector b. Data frame c. List d. Date-time | **1** | 2 |
| 12 | What does the function “min” do? a. Finds the minimum value in the vector x b. Finds the minutes in the Date-time variable x c. minimizes x d. Does nothing | **1** | 1 |
| 13 | What will be the datatype of y? a. Same as x b. numeric c. character d. integer | **1** | 2 |
| 14 | Give an appropriate name to this function | **2** | 2 |
|  |  |  |  |
| **Section 3** | | | |
| Answer the following questions based on the "ds\_salaries" dataset. | | | |
| 15 | How many variables has data been collected for? | **1** | 3 |
| 16 | Make a histogram of the salary of the companies in USD with the following conditions:  a. Keep the panel background blank b. On x-axis, keep the text at an angle of 60, set the hjust and vjust arguments to 1 c. Make axis titles bold d. Remove the grid. e. Fill the histogram with red color | **5** | 3,4 |
| 17 | Use facet\_wrap with the above plot to get the histograms based on experience level of the employees. Set number of columns to 2 | **1** | 4 |
| 18 | Find the average salary in usd of a data scientist in each country (use company location). Hint: use group\_by and summarise. | **2** | 3 |
| 19 | Which country has the highest average salary? Which country would you like to go to for a job? | **2** | 3 |
| 20 | Create a new column that holds the conversion rate of the salary currency to USD. | **2** | 3 |
| 21 | Print the average conversion rate of INR to USD. | **2** | 3 |
|  |  |  |  |
| **Section 4** | | | |
| **Q. No.** | **Question** | **Marks** | **C.O.** |
| 22 | Write a function that takes 3 inputs: two numbers and one character. If the character is “+”, sum the two numbers, if it is “-“, find the magnitude of the difference between the two numbers. If any of the conditions above is not met or if the input is invalid, print an error message. Then call the function for the following set of inputs: a. 2,3,"+" b. 3, "4", "-" c. 3, "a", "-" d. 5,6,"a" | **7.5** | 1,2 |
| 23 | Write a function that takes an integer representing a sum of money as input and prints out the number of notes in the denominations of 100, 50, 10, 5, 2, 1 that are needed to make up the sum. For example, if the input is 151, the answer is 1,0,0,0,0,1. Call the function for the following inputs: a. 111 b. 3000 c. 23232 d. 4354 | **7.5** | 1,2 |
| 24 | Write a function that takes two numeric vectors and calculates the dot product of the two vectors, then finds the angle between the two vectors and returns the angle. If the length of the vectors is not the same, add zeros in the shorter vectors to compensate. For example, if the vectors are c(1,1) and c(1,3,4); then change the first vector to c(1,1,0) | **7.5** | 1,2 |

**\*CO –** Course Outcome

🙟♦🙝