CBCS SCHEME

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BDS306C

Third Semester B.E./B.Tech. Degree Examination, June/July 2024
Data Analytics with R

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Determine the output of following R statement. i) C,(1, 2, 3, 4, 5) + C(6, 7, 8, 9, 10) ii) –1 : 4* –2 : 3 iii) identical (2^3, 2**3) iv) 5 : 9 %/% 2 v) C(2, 4 – 2, 1 + 1) = 0	5	L3	CO1
	b.	Explain the basic data types of R with examples	10	L2	CO1
	c.	Develop a R program to find the factorial of a given number using recursive function call.	5	L3	CO1
		OR			
Q.2	a.	Explain repeat, while and for loop with R programming example.	10	L2	CO1
	b.	Develop R code to calculate the following financial metrics in order to assess the financial statement of an organization being supplied with 2 vectors of data : Monthly Revenue = [50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 155, 165] and monthly expenses = [30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85] for the financial year i) Profit for each month ii) profit after tax for each month (tax rate is 30%) iii) profit margin for each month iv) good months and bad month where profit after tax was greater than the mean and less than the mean for the year respectively v) the best and worst month where the profit after tax was max and min for the year respectively.	10	L3	CO1
		Module – 2			
Q.3	a.	Develop a R program to create two 3 × 3 metrics A and B and perform the following operations i) Transpose of the matrix ii) Addition iii) subtraction iv) multiplication v) access the first row of matrix A.	10	L3	CO1
	b.	Describe the following with R programming example i) creation of list ii) assigning the names to elements of the list iii) Accessing the elements of the list index and names iv) conversion of the vector to list v) combine two lists.	10	L2	CO1
		OR			
Q.4	a.	Determine the output of following R statement i) parts (C('pin', 'Red'), 'Apple') ii) Substring ("The cat is on the wall"", 3, 10) iii) Strsplit ("I like Banana, Orange and Pineapple,", " ") iv) base name ("C :/program Files/test.R") v) gl(5, 3, labels = C('one', 'two', 'three', 'four', 'five'))	5	L3	CO1

	b.	Develop R program to create a data frame with following details and do the following operations i) Subset the Data frame and display the details of only those items whose price is greater than or equal to 350. ii) Subset the Data frame and display only the items where the category is either "office supplies" or "Destop supplies" iii) Create another data frames called "item – details" with three different fields item code, ItemQtyonHand and ItemReorderLvl and merge the two data frames.	10	L3	CO1
	c.	Explain the data conversion function with examples.	5	L2	CO1

Item code	Item category	Item price
1001	Electronics	700
1002	Destop supplies	300
1003	Office supplies	350
1004	USB	400
1005	CD drive	800

Module – 3

Q.5	a.	Describe the following data frame manipulation function with examples R program i) with ( ) ii) within ( ) iii) order ( ).	10	L2	CO2
	b.	Design a data frame in R for storing about 10 employee details. Creates a CSV file named "input –CSV" that defines all the required information about the employee such as id, name, salary, start date dept. Impact into R and do the following analysis. i) Find the total number of rows and columns ii) Find the maximum salary iii) Retrieve the detail of the employee maximum salary iv) Retrieve all the employee in the IT department whose salary is greater than 20000 v) Retrieve all the employee working in the IT department.	10	L3	CO2

OR

Q.6	a.	With R program illustrate the concept of the following grouping function i) apply ( ) ii) lapply ( ) iii) mapply( ) iv) rapply ( ) v) tapply ( ).	10	L3	CO2
	b.	Describe the functions used for importing and exporting unstructured files with example programs.	4	L2	CO2
	c.	Develop R code to demonstrate the concept of data reshaping using cbind ( ) and rbind ( ) function with relevant and input and output.	6	L3	CO2

Module – 4

Q.7	a.	Write the basic syntax for creating pie chart and explain the each parameter of the function. Also write a R program to create a pie chart for the given list of flowers with count [Rose = 25, Lotus = 35, Lilly = 10, Sunflowers = 5, Jasmine = 15]. Draw the created pie chart.	10	L3	CO3
	b.	Explain the different ways of creating scatter plot.	10	L2	CO3

		OR			
Q.8	**a.**	With relevant graph illustrate vertical and horizontal bar plot using base graphics with R program examples.	**10**	**L2**	**CO3**
	b.	Describe the following with examples : i) hist( ) ii) plot( ) iii) boxplot( ) iv) bwplot( ) v) ggplot( ).	**10**	**L2**	**CO3**
		Module – 5			
Q.9	**a.**	Define the basic statistical measures mean, meadian, mode, standard deviation and variance. Also develop R code to create a vector x = [45, 56, 78, 12, 3, -91, -45, 15, 1, 24] and to find the basic statistical measures.	**10**	**L3**	**CO4**
	b.	What is normal distribution? Explain the different types of normal distribution built in functions of R.	**10**	**L2**	**CO4**
		OR			
Q.10	**a.**	Consider the data set "mtcars" avaialbe in R environment develop R commands to do the following : i) Find the correlation between the horse power ("hp") and mileage per gallon ("mpg") of the cars and plot "hp" Vs "mpg" using plot command ii) Find the correlation between the horse power and plot "hp" Vs "disp" using plot command iii) Analyze the correlation between the various columns of "mtcars" dataset.	**10**	**L3**	**CO4**
	b.	Explain linear regression analysis with example.	**10**	**L2**	**CO4**

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