Enrollment No.....

Faculty of Engineering

End Sem Examination May-2023

OE00051 R Programming

Programme: B.Tech. Branch/Specialisation: All

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. Which of the following is an invalid identifier? **1**

(a) date.of.birth (b) Rank2_a

(c) Sum_of (d) _prod

ii. If you explicitly want an integer, you need to specify the _____ suffix. **1**

(a) D (b) R (c) L (d) All of these

iii. What is the length of b? **1**

b <-2:7

(a) 4 (b) 5 (c) 6 (d) 0

iv. Which of the following is used for generating sequences? **1**

(a) seq() (b) sequence() (c) order() (d) None of these

v. When is debug() used? **1**

(a) To print the list of functions that were called before the error occurred

(b) To step through the execution of a function, line by line

(c) To stop the execution of a function until the user allows it to continue

(d) To check variables in upper-level functions

vi. What will be the output of following code? **1**

```
pow <- function(x, y) {
result <- x^y
print(result)
}
> pow(2, x=8)
```

(a) 256 (b) 64 (c) 128 (d) None of these

vii. What is data in the following line of code? **1**
data <- read.csv("input.csv")
(a) CSV file (b) Dataframe
(c) Vector (d) Text file

viii. XML file can be read by using the function? **1**
(a) read.xml() (b) read.table()
(c) xmlParse() (d) None of these

ix. Which of the following is not a valid string function in R? **1**
(a) tolower() (b) substr()
(c) abr() (d) gsub()

x. regexpr() **1**
(a) Return the index of the first match
(b) Returns the index of all matches
(c) Returns the Boolean value (True or False) of the matched string
(d) None of these

Q.2 i. What is R? Write its advantages and limitations. **4**

ii. (a) Write about vectors in R. **6**
(b) Explain all vector operations with examples.
(c) Show various ways of accessing vector elements.

OR iii. (a) What is factor in R? **6**
(b) Show how factors are created in different ways.
(c) Modify factor by applying some operations.

Q.3 Attempt any two:

i. (a) Create an array. **5**
(b) Manipulate array.
(c) Perform arithmetic operations on array.
(d) Write syntax for creating a matrix and create one with byrow=FALSE.
(e) What is the difference between data frame and matrix?

ii. What is Data frame? Explain its characteristics along with its operations. **5**

iii. (a) Create a matrix. **5**
(b) Add a row and a column to the existing matrix.
(c) Calculate and print multiplication, Transpose, Eigen values and Eigen vectors.

Q.4 i. (a) Explain next and break with R code. **4**
(b) Explain debugging in R.

ii. Create an object, class, constructor and a method using reference class format. **6**

OR iii. Write syntax and example code for following control structures/loops: **6**
(a) if else (b) for (c) switch (d) repeat

Q.5 i. How is data read from and written in both CSV and Excel files? Explain with examples. **4**

ii. Explain in detail how is data read and written in json, xml and html table. **6**

OR iii. How to export data from R? Explain in detail. **6**

Q.6 i. Write about the following functions with example: **4**
(a) plot() (b) points() (c) legend() (d)lines()

ii. Explain date and time in R in detail. **6**

OR iii. Draw an explain with code in R: **6**
(a) One-dimension plot
(b) Function plot
(c) Box plot

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Marking Scheme

OE00051(T) -R programming

Q.1	i)	d)	**1**
	ii)	c) L	**1**
	iii)	c)6	**1**
	iv)	a) seq()	**1**
	v)	b) To step through the execution of a function, line by line.	**1**
	vi)	(d) None of these	**1**
	vii)	b)Dataframe	**1**
	viii)	c)xmlParse()	**1**
	ix)	c)abr()	**1**
	x)	a) return the index of the first match	**1**
Q.2	i.	What is R? 2 marks Write its advantages and limitations. 2 marks	**4**
	ii.	a)Write about vectors in R. 2 marks b)Explain all vector operations with examples. 2 marks c)Show various ways of accessing vector elements. 2 marks	**6**
OR	iii.	a)What is factor in R? 2 marks b)Show how factors are created in different ways. 2 marks c) Modify factor by applying some operations. 2 marks	**6**
Q.3	i.	a. Create an array. b. Manipulate array c. Perform arithmetic operations on array. d. Write syntax for creating a matrix and create one with byrow=FALSE e. What is the difference between data frame and matrix?	**5** (1 mark each)
	ii.	What is Data frame? 2 marks explain its characteristics along with its operations. 3 marks	**5**
OR	iii.	a) Create a matrix. 1 mark b) Add a row and a column to the existing matrix. 1 mark c) Calculate and print multiplication, Transpose, Eigen values and Eigen vectors. 3 marks	**5**
Q.4	i.	a) Explain next and break with R code. 2 marks b) Explain debugging in R. 2 marks	**4**
	ii.	Create an object, 1.5 class, 1.5 constructor and 1.5 a method using reference class format. 1.5	**6**
OR	iii.	Write syntax and example code for following control structures/loops: a) if else b) for c)switch d)repeat e)while f)for with else	**6 (1 mark each)**
Q.5	i.	How is data read from and written in both CSV and Excel files. Explain with examples. (CSV-2 marks, Excel-2 marks)	**4**
	ii.	Explain in detail how is data read and written in json, xml and html table. (Json – 2 marks, xml 2 marks html 2 marks	**6**
OR	iii.	How to export data from R, Explain in detail.	**6**
Q.6	i.	Write about the following functions with example: a)plot() b)points() c)legend() d)lines() Each 1marks	**4**
	ii.	Explain date and time in R in detail.	**6**
	iii.	Draw an explain with code in R: 2 each mark a) One-dimension plot b) Function plot c) Box plot	**6**

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