No. of Printed Pages : 5

BEY–015

BACHELOR OF SCIENCE (APPLIED SCIENCE–ENERGY) (BSCAEY)

Term-End Examination

June, 2025

BEY-015 : COMPUTER DATA ANALYSIS WITH R AND PYTHON

Time : 3 Hours *Maximum Marks : 70*

Note : *Question No.* ***1*** *is compulsory and carries 25 marks. Attempt any* ***three*** *questions from question nos.* ***2*** *to* ***5****.*

1. (a) Explain the R reserved words and datasets in R with an example. 3

   (b) How does the rbind() function differ from the cbind() function in R when working with matrices ? 3

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(c) Can you perform the addition and multiplication operations on matrices A and B ? Give reasons in support of your answer : 3

A ← matrix (c (1, 0, 0, 1), n col = 2)

B ← matrix (c (1, 1, 1, 1), n col = 2)

(d) What is coercion in R and how does it work ? Illustrate with the help of an example. 3

(e) What would be the output of the following operations given the data values as ? 3

a = 5, b = 9, c = 10, d = 2

(i) a**d

(ii) b + = 7

(iii) (a < b) and (c > d)

(f) What is a 'tuple' in the context of Python programming ? Explain with the help of an example. 3

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(g) What would be the output after each instruction of the following Python program ? 5

```
def factorial( )
fact = 0
n = int (input (“Enter a number”)
for i in range (1, 3) :
    fact = fact * i
print(“The output is”, fact)
factorial( )                #function calling
```

(h) What is the purpose of .....init..... . py fill in Python package ? 2

2. (a) Define a vector in R. Describe any *three* methods of creating a vector in R with example. 5

(b) Create a function in R to check whether the given number is an even number or an odd number using recursion function. 5

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(c) What is membership testing in R ? How can it be used to check for the presence of element in a matrix ? Explain with the help of an example. 5

3. (a) Write the name of the different types of loops available in R. Also, write general syntax of each *one* of them. 5

(b) Explain the apply( ) and tapply( ) function in R, including their general syntax and usage. Provide example to illustrate their functionality. 5

(c) Which statistical measures do the summary( ) function provide as output when it is used on a numeric data ? 5

4. (a) Explain the difference between mutable and immutable data structures in Python with example. 5

(b) Write a Python script to display any *five* built-in methods available for a set. 5

(c) How can indexing and slicing be used in Python ? Explain with example. 5

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5. (a) What are the different types of operators in Python ? Explain the following operators in Python with the help of examples of each : 5

(i) %

(ii) = =

(iii) not

(iv) //

(b) What are Lambda functions in Python ? How are they different from normal functions ? 5

(c) Explain file handling in Python. What are the different modes for opening a file ? 5

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