BOWEN UNIVERSITY IWO
COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE
MICROBIOLOGY / PURE AND APPLIED BIOLOGY PROGRAMME
2022/2023 SECOND SEMESTER EXAMINATION

BLY 306: INTRODUCTION TO R STAT   Credit - 1

Instructions: Answer question one and any other two   Time Allowed: 1hr:30min.

1. (a) Define the following basic data types in R, with appropriate examples:
   (i) Scalar   (3 marks)
   (ii) A matrix   (3 marks)
   (iii) A data frame   (3 marks)
   (iv) A list   (3 marks)
   (v) List the three types of arithmetic operators in R and its description.   (3 marks)
   (b) (i) Mention five basic understanding you are required to have before using R software.   (5 marks)
   (ii) Give advantages of knowing R language.   (5 marks)
   (iii) Write briefly on the following; bar chart, pie chart, data.   (5 marks)

2. (a) The height of 7 trees sampled within the University campus is given below (metres): 12.0, 10.5, 9.5, 6.3, 13.5, 12.5 and 7.2. Determine the (i) mean, (ii) median, (iii) range, and (iv) standard deviation.   (6 marks)
   (b) Briefly define the following;
   (i) Data presentation (ii) Mean (iii) Range (iv) Histogram   (4 marks)
   (c) Determine the type of the following data;
   (i) Year of birth (ii) Weight (iii) Hours of sleep   (iv) State of origin   (v) Class of degree (vi) Blood group   (3 marks)
   (d) Explain the types of data and give examples   (7 marks)

3. (i) Give a detailed description on how to Install R Studio on Windows.   (15 marks)
   (ii) Highlight the functions of each of the four quadrants in R studio environment.
                                                                                (5 marks)

4. Write an R code to solve the quadratic equation: $2y^2 + y - 5 = 0$ (20 marks)

5. Given the mycelia growth inhibition (mm) of *Flavodon flavus* and *Aspergillus flavus* by Lemon oil as:
   Growth inhibition of *Flavodon flavus* (mm): 35.76, 27.43, 41.4 and 32.1
   Growth inhibition of *Aspergillus flavus* (mm): 3.2, 7.2, 2.6 and 5.2
   (a) Write an R command to compute the mean of mycelia growth inhibition for both organisms.   (10 marks)
   (b) Write a code to plot bar chart for *F. flavus*, including axis labels.   (10 marks)