PBN-1603220001050500 Seat No. _____

B. Sc. (Bioinformatics) (Sem. V) (CBCS) Examination

November / December - 2018

BI - 505 : Python & R Programming
(New Course)

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions :

(1) All questions are compulsory.

(2) The right side figure indicates total marks of the question.

1 Attempt the following : **14**

(a) Answer the following short questions : (all compulsory) **4**

(1) Define python.

(2) Which symbol is used for comment in python ?

(3) What is the extension of python file ?

(4) What will be the output of below python script ?

```
protein = "vlspadktnv"
lsp_count = protein.count('lsp')
print("lsp: " + str(lsp_count))
```

(b) Answer any one of the following questions. **2**

(1) Explain Bash shell scripting language.

(2) Explain len () in detail.

(c) Answer any one of the following questions. **3**

(1) Explain find function with example.

(2) Difference between python syntax and other programming languages.

(d) Answer any one of the following questions. **5**

(1) Explain counting and finding substring in detail.

(2) How to file write in python ? Explain it with example.

2 Attempt the following : **14**

(a) Answer the following short questions : (all compulsory) **4**

(1) Define loop.

(2) List out all regular expressions.

(3) Define function.

(4) Define tuple.

(b) Answer any one of the following questions. **2**

(1) Write a python script to print 1 to 10 numbers using while loop.

(2) Write a python script to print 10 to 1 numbers using for loop.

(c) Answer any one of the following questions. **3**

(1) Explain continue statement with example.

(2) Explain break statement with example.

(d) Answer any one of the following questions. **5**

(1) Explain Dictionary in detail.

(2) Write a python script to convert DNA sequence into its complementary and RNA sequence.

3 Attempt the following : **14**

(a) Answer the following short questions : (all compulsory) 4

(1) Recursion is good for solving problems that have a _____ structure.

(2) Which loop is used to keep going until desired result is obtained ?

(3) Define Tuple.

(4) True or False – We can use a dictionary to store child $\rightarrow$ parent relationships, but not parent $\rightarrow$ child relationships.

(b) Answer any one of the following questions. **2**

(1) Explain child to parent tree in brief.

(2) Explain tree structure in python.

(c) Answer any one of the following questions. **3**

(1) Explain constructor with example.

(2) What is exception handling ?

(d) Answer any one of the following questions. **5**

(1) Explain Recursion with example.

(2) Write a program to store DNA sequence using inheritance.

4 Attempt the following : **14**

(a) Answer the following short questions : (all compulsory) **4**

(1) The function barplot (summary (x)) where x is a categorical variable will plot a bar plot of x (True/ False)

(2) To read an SPSS file into R use library (foreign); read.spss ("____")

(3) _____ is a System of graphing in R.

(4) Which of the following statements is true of integrating R in research works ?

(a) R cannot be used for anything beyond reading and manipulation of data.

(b) R can be used to both read, store, analyze data, and write reports.

(c) R cannot be combined with LaTeX.

(d) R tables cannot be combined to a format to be read by standard spreadsheet programmes.

(b) Answer any one of the following questions. **2**

(1) What are vectors with example ?

(2) What is array and list in R ?

(c) Answer any one of the following questions. **3**

(1) Explain data frames with example.

(2) Write a program to create two 2×3 matrix, multiply and divide the matrices.

(d) Answer any one of the following questions. **5**

(1) Explain operators in R.

(2) Write the difference between SPSS and SAS.

5 Attempt the following : **14**

(a) Answer the following short questions : (all compulsory) **4**

(1) What is R package ?

(2) Function to get the list of all packages installed is _____.

(3) What is data reshaping ?

(4) Command for setting or getting directory in R ?

(b) Answer any one of the following questions. **2**

(1) How to read a data from file in R ?

(2) Explain r can be used as a calculator with some example.

(c) Answer any one of the following questions. **3**

(1) Explain Packages in R and Os facilities ?

(2) Explain different types of plots in R.

(d) Answer any one of the following questions. **5**

(1) Bioconductor and its different packages.

(2) Write a program using function data.frame () from the data frame elasticband, plot a graph between distance and stretch from the table below.

Stretch	46	54	48	50	44	42	52
Distance	148	182	173	166	109	141	166