

9	While using BioMart, a user selects a dataset and applies filters before retrieving attributes. What is the purpose of applying filters in BioMart queries? a. To format graphical outputs b. To restrict results to specific biological conditions or gene sets c. To convert gene sequences into proteins d. To remove duplicate datasets	CO2	K2
10	A researcher imports a dataset using read_csv() instead of base R read.csv(). What advantage does the Tidyverse function provide? a. It automatically removes missing values b. It offers faster and more user-friendly data import with better data type handling c. It converts data into graphical format d. It performs normalization of data automatically	CO2	K2
Q. No.	SECTION B (10 x 2= 20 marks) Answers in about 50 words	CO	KL
11	What are the uses of Entrez and Expasy?	CO3	K3
12	Define hierarchical inheritance with example.	CO3	K3
13	Compare and contrast between NumPy and SciPy.	CO3	K3
14	Mention the role of BioAlign module.	CO3	K3
15	Define pandas with an example.	CO3	K3
16	List the applications of Tidyverse.	CO4	K4
17	Write short notes on Matplotlib and Scikit learn.	CO4	K4
18	What is the association between factors and levels?	CO4	K4
19	Why is R known as statistical calculator?	CO4	K4
20	List the uses of Biostrings.	CO4	K4
Q. No.	SECTION C (4 x 10= 40 marks) Answer in about 600 words	CO	KL
21	Explain in detail about Operators in Python. (OR) Give the codes for complement, reverse complement, transcription, back transcription and translation of a sequence.	CO4	K4
22	How to perform multiple sequence alignment of the following sequences: seq1 = AAAACGT; seq2 = AAA-CGT; seq3 = AAAAGGT (OR) Elaborate on the conditional loops and control structures in Python.	CO4	K4
23	Give the codes to parse data from Genbank and Swissprot. (OR) Give the codes for construction of error bars and sine waves using Matplotlib.	CO5	K5
24	Explain the different types of inheritance in python with examples. (OR) Explain the types of variables in R with examples.	CO5	K5
Q. No.	SECTION D (2x 15=30 marks) Answer any TWO questions in about 1200 words	CO	KL
25	What is a contour plot? Give the codes to create a contour plot. Add notes on the importance of a contour plot.	CO5	K6
26	Elaborate on the various Bioconductor packages in R.	CO5	K6
27	Give the code to construct a PPI network using R.	CO5	K6
28	Explain the role of R in Biomedical Data Science.	CO5	K6