Q. Code:198225

Reg. No. | | | | | | | | | | | | | |

B.E. / B. TECH.DEGREE EXAMINATIONS, MAY 2023

Second Semester

CS22201 – PYTHON FOR DATA SCIENCE

(Computer Science and Engineering)

(Regulation 2022)

TIME:2 HOURS **MAX. MARKS: 60**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Students will be able to understand the mathematical foundation for data science.	**2**
CO 2	Students will be able to solve computational problems in python.	**3**
CO 3	Students will be able to handle Python arrays using NumPy package.	**3**
CO 4	Students will be able to manipulate data using Pandas.	**3**
CO 5	Students will be able to understand the pattern of data by graphical displays using Matplotlib.	**2**

PART- A(10x2=20Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	For the given stem and leaf plot, i) What is the mode of the plot? ii) What is the mean of the plot?	**1**	**2**

Stem	Leaf
1	2 4
2	1 5 6
3	2 4 6
5	0 3 4 4
6	2 5 7
8	3 8 9
9	1

2.	Write the probability distribution function of univariate and multivariate normal distributions.	**1**	**2**
3.	Differentiate the operation floor() and truncate().	**2**	**2**
4.	Briefly explain the module in Python with an example.	**2**	**2**
5.	Illustrate the usefulness of any four NumPy's Aggregation functions.	**3**	**2**
6.	Write the Python statement to create a 3 x 4 two-dimensional array.	**3**	**2**
7.	Construct a Pandas Series by any two ways.	**4**	**2**
8.	How will you Customize Plot Legends using Matplotlib?	**5**	**2**
9.	What is meant by contour plot in Python?	**5**	**2**
10.	How do you plot errors in Python?	**5**	**2**

PART- B (3x 10=30Marks)

			Marks	CO	RBT LEVEL
11. (a)	**(i)**	A hospital operating room needs to calculate three knee surgeries and two hip surgeries in a day. Calculate the number of possible sequences and write the sequences.	**(5)**	**1**	**3**

	(ii)	Covid-19 tests are common nowadays, but some results of tests are not true. Assume a diagnostic test has 99% accuracy and 60% of all people have Covid-19. If a patient tests positive, what is the probability that they actually have the disease?	**(5)**	**1**	**3**

(OR)

(b)	**(i)**	The marks scored by 3 students in Physics and Biology are given below. Find the sample Covariance matrix.	**(5)**	**1**	**3**

Student	Physics(X)	Biology(Y)
A	92	80
B	60	30
C	100	70

	(ii)	Interpret the following covariance matrix:	**(5)**	**1**	**3**

	X	Y	Z
X	60	32	-4
Y	32	30	0
Z	-4	0	80

12. (a)		Illustrate the list operations for the following with suitable examples. (i) Concatenation of two lists (ii) Insert, Replace and Delete an item at the given position (iii) Insert, Replace and Delete a slice of items (iv) Search an element	**(10)**	**2**	**3**

(OR)

(b)		With suitable examples, explain Python dictionary in detail discussing its operations for the creation, insertion, deletion, accessing an item and printing all (keys, values and items) and how will you set the default value if the key is not found in the dictionary.	**(10)**	**2**	**3**
13. (a)		Discuss the three rules of broadcasting in NumPy to determine the interaction between the two arrays with examples.	**(10)**	**3**	**3**

(OR)

(b)		Create a NumPy's Structured array of students, which has different fields like name, age and marks. Sort the array according to name and display the student array.	**(10)**	**3**	**3**

PART- C (1x 10=10Marks)

(Q.No.14 is compulsory)

			Marks	CO	RBT LEVEL
14.		Explain the effective technique of Data Manipulation with Pandas for the following: (i) Data Selection Dataframe (ii) Handling Missing Data	**(10)**	4	**5**

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