CBCS SCHEME

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20MCA31

Third Semester MCA Degree Examination, Jan./Feb. 2023
Data Analytics using Python

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Define keywords, statements, expressions, variables, precedence and associativity with examples and syntax. **(10 Marks)**

b. Explain with syntax and example different types of Python data types and type( ) function. **(10 Marks)**

OR

2 a. Discuss different forms of if control statements with necessary examples. **(10 Marks)**

b. What is a function? Mention its types. Write a python program to add two numbers using function, read input from the user. **(10 Marks)**

Module-2

3 a. Define string. Explain with necessary coding five basic string operations. Explain string slicing and joining. **(10 Marks)**

b. Explain List creation, indexing and built in functions used on lists with syntax and examples. **(10 Marks)**

OR

4 a. Differentiate between sets, tuples and dictionaries. Write a python program to demonstrate encapsulation and overloading. **(10 Marks)**

b. What is inheritance? Explain different types of inheritance with necessary example. **(10 Marks)**

Module-3

5 a. Define creating an array from Python lists. Explain numpy array attributes. **(06 Marks)**

b. Discuss with example numpy array concatenation and splitting. **(08 Marks)**

c. Explain specialized universal functions:
(i) Trignometric (ii) Exponents and logarithms with necessary coding. **(06 Marks)**

OR

6 a. Mention Pandas data structures. Create a dataframe with three dimensional list state, year, POP (dictionary). Write necessary coding for retrieving row values and modifying column values. **(06 Marks)**

b. Explain with example the concept of reindexing and ffill method. **(06 Marks)**

c. How do we handle missing data in Python using Pandas? Explain with coding. **(08 Marks)**

Module-4

7 a. Explain reading and writing data in text format in Python with examples. **(10 Marks)**

b. Explain the following methods with respect to database interaction:
i) Create ii) insert iii) connect iv) execute v) fetch all. **(10 Marks)**

OR

8 a. Explain with example the following merge methods:
i) inner ii) left iii) right
Create two dataframes with the following :

df1:

data1	key
0	b
1	b
2	a
3	c
4	a
5	b

df2:

data2	key
0	a
1	b
2	a
3	b
4	d

(10 Marks)

b. Explain Data transforming using a function or mapping. Create a dataframe with the following columns:

Food	Ounce
Bacon	4.0
Pulled pork	3.0
Bacon	12.0
Honeyham	5.0

Add a column indicating the type of animal that each food come from. **(10 Marks)**

Module-5

9 a. Write a Python program to plot sinusoid and cosine waves using Matplotlib and label them with necessary title and labels. **(10 Marks)**

b. Explain with necessary coding creating a basic error bars and continuous errors. **(10 Marks)**

OR

10 a. Write a Python program to plot the histogram as follows (customized histogram). [Refer Fig.Q10(a)].

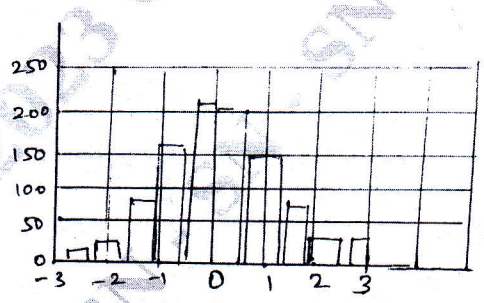

Fig.Q10(a) **(10 Marks)**

b. What is Seaborn plot? Explain pair plots for 'iris' dataset and kernel density estimation using kdeplot and displot. **(10 Marks)**

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