BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – MCA-2024
Course Name – Problem Solving using Python
Course Code - MCA17101 (T)
(Semester I)

Full Marks : 40 **Time : 2:0 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 10=10

1. *Choose the correct alternative from the following :*

(i) What will be the output of the following Python expression? print("%.2f"%x) if x=56.236

   a) 56.236 b) 56.23
   c) 56.0000 d) 56.24

(ii) What will be the output of the following Python code snippet? for i in [1, 2, 3, 4][::-1]: print(i, end=' ')

   a) error b) 4321
   c) 1234 d) None of the these

(iii) Which of the following is correctly evaluated from this expression ?

   a) (x**y) / z b) (x / y) * z
   c) (x**y) % z d) (x / y) / z

(iv) What will be the output of the following Python function? min(max(False,-3,-4), 2,7)

   a) -4 b) -3
   c) 2 d) FALSE

(v) What is the output of the following program? import from *math a = 2.13 b = 3.7777 c = -3.12 print(int(a), floor(b), ceil(c), fabs(c))

   a) 2 3 -4 3 b) 2 3 -3 3.12
   c) 2 4 -3 3 d) 2 3 -4 3.12

(vi) Which function should you choose to create an n-dimensional in NumPy?

   a) np.make_array() b) np.array()
   c) np.create_nd() d) np.array2d()

(vii) Which function allows you to select and display the last few rows of a DataFrame?

   a) df.tail() b) df.last()
   c) df.end() d) df.view()

(viii) Which plot is also known as the 'Whisker plot' in Matplotlib?

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a) Bar
b) Pie
c) Histogram
d) Box plot

(ix) Which command would you select to get a summary of the DataFrame, including count, mean, and standard deviation?

a) df.info()
b) df.describe()
c) df.summary()
d) df.stats()

(x) How do you choose to add a new column to a DataFrame in Pandas?

a) df.insert_column()
b) df['new_col'] = value
c) df.add_column()
d) df.new_column = value

Group-B
(Short Answer Type Questions)

3 x 5=15

2. Write a Python function to find the length of the longest word in a given sentence. (3)
3. Write a python program to find the reverse of a given number using while loop. (3)
4. Write a Python function that counts the number of vowels in a given string. Explain how the (3) function works.
5. Define a method within a class that calculates the area of a rectangle. How would you (3) ensure that the method correctly refers to the instance of the object using the self parameter?
6. How would you create a NumPy n-dimensional array from a list of lists and perform (3) element-wise addition with another n-dimensional array of the same shape?

OR

How can Matplotlib be applied to analyze and interpret complex data visualizations? (3)

Group-C
(Long Answer Type Questions)

5 x 3=15

7. Write a function in Python that returns the prime factors of a given integer. (5)
8. Solve how to use Python to open a file, check if the file is empty or not and print a message (5) indicating whether it is empty or not.
9. Evaluate the performance of selection sort compared to bubble sort. Which is better in (5) practice, and why?

OR

Interpret how the del operation works on dictionaries? Explain with an example. (5)

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