CE315(CDOL1) (R20)

B.TECH. DEGREE EXAMINATION, NOVEMBER-2024

Semester V [Third Year] (Regular & Supplementary)

PYTHON FOR DATA SCIENCE

Time: Three hours   Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
    (a) Write about the list, tuple, set and dictionary of
         Python.   CO1
    (b) List the libraries of Python scientific stack.   CO1
    (c) State the difference between list and array of
         NumPy.   CO1
    (d) What is serialization of objects in Python?   CO2
    (e) State the purpose of empty () operator in Python.   CO2
    (f) Distinguish DataFrame and Series in one aspect.   CO2
    (g) What is an index?   CO3
    (h) Write an example for matrix multiplication using
         vectorized API of NumPy.   CO3
    (i) Briefly highlight the features of Series data structure
         in Pandas.   CO3
    (j) Write a Python statement to read a delimited CSV
         file into DataFrame.   CO4
    (k) Write about Series and DataFrame as data analysis
         libraries in Python.   CO4
    (l) What is a 'pickled' object?   CO4
    (m) List the functions to handle missing data.   CO4
    (n) What is a Vectorized String function?   CO4

UNIT – I

2. (a) Write a Python program to check if a 3 digit
         number is Armstrong number or not.   (7M) CO1
    (b) Explain the basic data types available in
         Python with examples.   (7M) CO1

1

(OR)

3. (a) Explain the concept of scope and lifetime of variables in Python programming language with an example. (7M) CO1
   (b) Write Python code to find the factorial of a number. (7M) CO1

UNIT – II

4. (a) Define file and explain the different types of file opening modes. (7M) CO2
   (b) Write a program that prompts the user to enter a text file, reads words from the file and displays all the non-duplicate words in ascending order. (7M) CO2

(OR)

5. (a) Write Python code to determine whether the given string is a Palindrome or not using slicing. (7M) CO2
   (b) Write Python program to count the total number of vowels, consonants and blanks in a String. (7M) CO2

UNIT – III

6. (a) Write about features of Lists with examples. (7M) CO3
   (b) Write a program snippet in Python to find minimum value in a given list of integers. (7M) CO3

(OR)

7. (a) Discuss the construction and usage of tuple. State the difference between tuple and a list. (7M) CO3
   (b) State the salient features of a dictionary in Python compared to other collections. (7M) CO3

UNIT – IV

8. (a) Illustrate the importance of using pandas to handle missing data with relevant example. (7M) CO4
   (b) Write a Python code to fill the missing data using fillna function. (7M) CO4

(OR)

9. (a) Write about Numpy statistical API to perform descriptive statistical operations like arithmetic mean, standard deviation and variance. (7M) CO4
   (b) Using NumPy, write a Python code snippet to compute dot product, vector product and inner product. (7M) CO4

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CE315(CDOL1) (R20)

CE/ME325(CDOL1) (R20)

B.TECH. DEGREE EXAMINATION, SEPTEMBER-2024

Semester VI [Third Year] (Supplementary)

PYTHON FOR DATA SCIENCE

Time: Three hours   Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   (a) List python core data types.   CO1
   (b) What are bitwise operators?   CO1
   (c) Define ord() function.   CO1
   (d) What is the syntax for range ()?   CO1
   (e) What is the syntax of while statement?   CO1
   (f) Define local variable.   CO2
   (g) Define recursive function.   CO2
   (h) What is the use of index [] operator.   CO2
   (i) What is the syntax to open a file?   CO2
   (j) Define Dictionary.   CO3
   (k) Define zip () function.   CO3
   (l) What is the output when we execute list ("CIVIL")? CO3
   (m) List any two Unary ufuncs.   CO4
   (n) Define Series.   CO4

UNIT – I

2. (a) List various operators in python, in the order of
       their precedence.   (7M) CO1
   (b) Develop a python program to check whether the
       given number is palindrome or not.   (7M) CO1

(OR)

3. List out various conditional statements in python with
   syntax   CO1

UNIT – II

4. (a) Develop a program to find factorial of a number using recursive function. (7M) CO2

   (b) Develop a python program to find maximum of two numbers using functions. (7M) CO2

(OR)

5. (a) Demonstrate String Operations in python with an example. (7M) CO2

   (b) Explain the following methods associated with file object: (7M) CO2
      (i) read ()
      (ii) readline ()
      (iii) readlines ()
      (iv) seek ()

UNIT – III

6. Explain briefly the list methods and operators. CO3

(OR)

7. (a) Explain the following dictionary methods with an example. (7M) CO3
      (i) get()
      (ii) keys()
      (iii) pop()
      (iv) update()
      (v) values()
      (vi) items()

   (b) What are the in-built functions for tuples? Explain with suitable examples. (7M) CO3

UNIT – IV

8. (a) How to create ndarrays? Explain with examples. (7M) CO4

   (b) Explain about data processing using arrays. (7M) CO4

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(OR)

9. (a) Summarize about DataFrame with examples. (7M) CO4

   (b) Explain about Reindexing with suitable examples. (7M) CO4

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Hall Ticket Number:

B.TECH. DEGREE EXAMINATION, MAY-2024

Semester VI [Third Year] (Regular & Supplementary)

PYTHON FOR DATA SCIENCE

Time: Three hours   Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   (a) Define keyword.   CO1
   (b) Define literals.   CO1
   (c) Define chr() function.   CO1
   (d) What are logical operators?   CO2
   (e) What is the syntax of if and if-elif-else.   CO2
   (f) Define global variable.   CO2
   (g) Define read()   CO2
   (h) What are the in-built functions for tuples?   CO3
   (i) List the dictionary operations.   CO3
   (j) Define Tuple.   CO3
   (k) Define split () method.   CO3
   (l) Define string.   CO3
   (m) List any two Binary ufuncs.   CO4
   (n) Define DataFrame   CO4

UNIT – I

2. (a) What is variable? What are the rules and
       conventions used for declaring variable?   (7M) CO1
   (b) Explain in brief all the data types supported by
       python.   (7M) CO1

(OR)

3. Explain various loop control statements available in
   python.   CO1

UNIT – II

4. (a) Develop a python program to swap two values using functions. (7M) CO2

   (b) Explain string operators with examples. (7M) CO2

(OR)

5. (a) Define a file and write its advantages. (7M) CO2

   (b) Classify file handling operations in python with examples. (7M) CO2

UNIT – III

6. (a) Explain the following list methods with an example. (7M) CO3

      (i) append()   (ii) extend()   (iii) insert()

      (iv) index()   (v) sort()   (vi) reverse()

   (b) List and clarify the operators supporting lists. (7M) CO3

(OR)

7. (a) Explain briefly about Dictionaries with suitable examples. (7M) CO3

   (b) What is meant by Tuple and how it is created? Explain with examples. (7M) CO3

UNIT – IV

8. (a) Explain arithmetic operations with NumPy arrays with suitable examples. (7M) CO4

   (b) Explain NumPy array indexing and slicing with suitable examples. (7M) CO4

(OR)

9. List the techniques to handle missing data. Explain the techniques with example. CO4

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Hall Ticket Number:

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CE315(CDOL1) (R20)

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B.TECH. DEGREE EXAMINATION, APRIL-2024

Semester V [Third Year] (Supplementary)

PYTHON FOR DATA SCIENCE

Time: Three hours   Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   - (a) "Python is an object-oriented language". Explain.   CO1
   - (b) What is token in Python?   CO1
   - (c) List core data types in python.   CO1
   - (d) What is Recursive function?   CO2
   - (e) What is return statement in Python?   CO2
   - (f) Explain binary files in Python.   CO2
   - (g) When would you use a list vs dictionary?   CO3
   - (h) Is a list mutable? Explain.   CO3
   - (i) What is the difference between append and extend?   CO3
   - (j) What will be the output of following code?   CO4
     import pandas as pd
     pd.Series([1,2], index=['a', 'b', 'c'])
   - (k) What is pandas dataframe?   CO4
   - (l) What is head() in pandas.   CO4
   - (m) What is the purpose of NumPy in Python?   CO4
   - (n) What the split(3) function does in NumPy array.   CO4

UNIT – I

2. (a) What is Python, and what is it used for? List the important features of python.   (7M)   CO1
   (b) List different decision making statements in python? Explain any one in detail.   (7M)   CO1

(OR)

3. (a) List the built-in functions in python. Explain print() and input() functions with example (7M) CO1

   (b) What is operator precedence and associativity? How to change it, explain with example. (7M) CO1

UNIT – II

4. (a) What is seek() in Python? Explain the syntax and give an example. (7M) CO2

   (b) Construct a Python function to find the maximum of three numbers. (7M) CO2

(OR)

5. (a) How to access and manipulate files and directories in a disk? (7M) CO2

   (b) Construct a Python function that takes a number as a parameter and checks whether the number is prime or not. (7M) CO2

UNIT – III

6. (a) Differentiate list and tuples in Python. Write a program with list and tuple. (7M) CO3

   (b) What is dictionary? Explain how to to create a dictionary, add or replace values in dictionary and retrieve values from dictionary. (7M) CO3

(OR)

7. (a) Write a simple program with dictionary and illustrate polynomials as dictionaries. (7M) CO3

   (b) Explain is zip and inverse zip function in Python. (7M) CO3

UNIT – IV

8. (a) What are ndarrays in NumPy? What are ways of creating 1D, 2D and 3D arrays in NumPy? (7M) CO4

   (b) How is np.mean() different from np.average() in NumPy? (7M) CO4

(OR)

9. (a) Given a data frame with rainfall data (day of the week and rainfall inches), write a function to find the median amount of rainfall for the days on which it rained. (7M) CO4

   (b) What is Pandas data structures? Explain how missing data is handled in pandas data frames. (7M) CO4

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CE315(CDOL1) (R20)

CE/ME325(CDOL1) (R20)

B.TECH. DEGREE EXAMINATION, NOVEMBER-2023

Semester VI [Third Year] (Supplementary)

PYTHON FOR DATA SCIENCE

Time: Three hours   Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:

(a)	What is the purpose of ord and chr functions?	CO1
(b)	List the bitwise operators.	CO1
(c)	Write the syntax for elif statement.	CO1
(d)	What is the purpose of break and continue.	CO1
(e)	Write the syntax for creating a function my_function() and calling the same.	CO2
(f)	Write the different methods used to open a file.	CO2
(g)	How you write to an existing file?	CO2
(h)	What are the immutable strings?	CO2
(i)	How you access elements of a list?	CO3
(j)	Sort the given list in ascending order: list = ["orange", "mango", "kiwi", "pineapple"].	CO3
(k)	Find the length of the given tuple: tuple1 = ("apple", "banana", "cherry").	CO3
(l)	How you concatenate two columns of Pandas dataframe?	CO3
(m)	Write the syntax to calculate the median value using Pandas.	CO4
(n)	Convert 1-D array with 8 elements to 3-D array with 2 x 2 elements.	CO4

UNIT – I

2. (a) Write a Python program to find the largest among three numbers using nested if else.   (7M) CO1

(b) Write a Python program to swap two variable values without using a third variable. (7M) CO1

(OR)

3. (a) Write a Python program that computes amount payable after discount from the price and quantity. The discount on amount is as follows: (8M) CO1
   (i) No discount when the amount less than or equal to 2000.
   (ii) 5% discount when the amount exceeds 2000.
   (iii) 10% discount when the amount exceeds 5000.
   (iv) 15% discount when the amount exceeds 10000.

(b) Write a Python program using nested for loops to print the following output: (6M) CO1
```
1
2 2
3 3 3
4 4 4 4
```

UNIT – II

4. (a) List the files access methods and explain each with an example. (6M) CO2
   (b) Explain the following with an example: (8M) CO2
   (i) Function with arguments
   (ii) Function with return value
   (iii) Function arguments with default values
   (iv) Keyword argument

(OR)

5. (a) Write a Python program to search a string in a text file and count number of occurrences of string in that file. (7M) CO2

(b) Write a Python program to find factorial of a given number using recursive functions. (7M) CO2

UNIT – III

6. (a) Write a Python program to take space separated input as a string split and store it to a list and print the string list. (7M) CO3
   (b) Demonstrate accessing elements from a two dimensional list with an example. (7M) CO3

(OR)

7. (a) Write a Python program to replace values in a list using indexing. (7M) CO3
   (b) Write a Python program to count even and odd numbers in a Dictionary. (7M) CO3

UNIT – IV

8. (a) Write a Python program to create a Pandas DataFrame from Lists of Dicts. (7M) CO4
   (b) Write a Python program to sort the elements in the given array using Numpy? (7M) CO4

(OR)

9. (a) Perform the following using Pandas: (7M) CO4
   (i) Create a Dataframe
   (ii) Add a column
   (iii) Select rows based on the column values
   (iv) Rename a column
   (b) Write a Python program to search the maximum and minimum element in the given array using NumPy. (7M) CO4

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CE/ME325(CDOL1) (R20)

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CE315(CDOL1) (R20)

B.TECH. DEGREE EXAMINATION, DECEMBER-2023

Semester V [Third Year] (Regular & Supplementary)

PYTHON FOR DATA SCIENCE

Time: Three hours   Maximum Marks: 70

Answer Question No.1 compulsorily. (14 x 1 = 14)
Answer One Question from each unit. (4 x 14 = 56)

1. Answer the following:
   (a) List the types of operators available in python.   CO1
   (b) What is the syntax of while statement?   CO1
   (c) List the Python data types.   CO1
   (d) What is the use of char function?   CO1
   (e) What is the use of index [ ] operator?   CO2
   (f) List any two string operators.   CO2
   (g) Define local and global scope of a variable   CO2
   (h) What is the syntax of write operation into file?   CO2
   (i) Define the seek() function.   CO2
   (j) What are list operators?   CO3
   (k) Define dictionary.   CO3
   (l) What is meant by Tuple and how is it created?   CO3
   (m) Define series.   CO4
   (n) Define reindexing.   CO4

UNIT – I

2. (a) What is variable? What are the rules and
       conventions used for declaring variable?   (7M) CO1
   (b) Write a Python program to find the sum of
       individual digits of a number.   (7M) CO1

(OR)

3. List out various conditional statements in Python with
   syntax.   CO1

UNIT – II

4. (a) What are the arguments? How are arguments passed to a function? (7M) CO2
   (b) Write a Python program to swap two values using functions. (7M) CO2

(OR)

5. (a) Explain any five basic operations performed on strings. (7M) CO2
   (b) Explain the following methods associated with file object (i) read() (ii) readline() (iii) readlines() (iv) write() (v) seek(). (7M) CO2

UNIT – III

6. (a) What is slicing and indexing in list? Explain with examples. (7M) CO3
   (b) Explain the methods of list class. (7M) CO3

(OR)

7. (a) What are the in-built functions for tuples? Explain with suitable examples. (7M) CO3
   (b) Briefly explain the dictionaries with suitable examples. (7M) CO3

UNIT – IV

8. (a) Explain the following array creation functions with example. (i) array (ii) arange (iii) ones (iv) zeros (v) empty. (7M) CO4
   (b) What is NumPy array indexing and slicing? Explain it with an example. (7M) CO4

(OR)

9. (a) How to create Series and DataFrame? Explain with examples. (7M) CO4
   (b) Explain any two ways to handle missing data. (7M) CO4

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CE315(CDOL1) (R20)

UNIT – IV

8. (a) Define slicing and apply different slicing operations on single and multi-dimensional array. (7M) CO4

   (b) Read data from any public repository and design a Python program to generate statistical reports for calculating maximum, count, average and mean. (7M) CO4

(OR)

9. (a) Demonstrate hierarchical indexing in Pandas with an example. (7M) CO4

   (b) Apply descriptive statistics of Pandas on students marks in six subjects. (7M) CO4

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CE/ME325(CDOL1) (R20)

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1. Answer the following:
   (a) Write the syntax for if-elif-else ladder   CO1
   (b) List the Python data types   CO1
   (c) List the boolean operators.   CO1
   (d) Write the syntax for while loop.   CO1
   (e) Create a function with a single argument.   CO2
   (f) What is the use of recursive functions?   CO2
   (g) Mention the role of seek() function.   CO2
   (h) What does traversing a string mean in Python?   CO2
   (i) Suppose the list given as
       list1 = ["apple", "banana", "cherry"]
       How you find the second last element.   CO3
   (j) How you join two Tuples.   CO3
   (k) What is the role of value() in method dictionary.   CO3
   (l) Create an ndarray by passing a list as input.   CO4
   (m) How null values are handled in Pandas?   CO4
   (n) How you convert a 1-D array with 12 elements into
       2-D array.   CO4

UNIT – I

2. (a) Define selection control statement. Illustrate multi-way selection with an example. (6M) CO1

(b) Write a Python program that allows the user to enter two integer values and displays the results when each of the following arithmetic operators is applied. For example, if the user enters the values 7 and 5, the output would be: (8M) CO1

7 + 5 = 12	7 / 5 = 1.40
7 − 5 = 2	7 // 5 = 1
7 * 5 = 35	7 % 5 = 2
	7 ** 5 = 16,807

(OR)

3. (a) Outline the operator precedence and associativity in evaluating the expression.   (7M) CO1

(b) Write a Python program to calculate sum of individual digits of a given number using while.   (7M) CO1

UNIT – II

4. (a) Interpret the elements of function definition in Python and contrast between actual, formal, mutable and immutable arguments.   (7M) CO2

(b) Implement a Python code that determines how many times a given letter occurs in a given string using recursion.   (7M) CO2

(OR)

5. (a) Outline the different sequence operations on strings.   (7M) CO2

(b) Develop a Python program to remove all the occurrences of a given character from a text file, copy the resultant text into another text file. Find the total occurrences of the eliminated characters and display the count along with the contents of the text file on to the console.   (7M) CO2

UNIT – III

6. (a) Describe the sequence of operations common to lists, tuples and string in Python.   (7M) CO3

(b) Create a dictionary named password_hint that contains email addresses as keys and associated values that contain both a user's "password security question" and the answer to the question. Make up data for five dictionary entries.   (7M) CO3

(OR)

7. (a) Write a python program to create a list and add n number of user-defined values to the list and display the same on to the console screen.   (7M) CO3

(b) Write a Python program to create grade calculator in Python using Dictionaries, given different scored marks of students. The test score is an average of the respective marks scored in assignments, tests, and lab work. The final test score is assigned using the below formula: (7M) CO3

10% of marks scored from submission of Assignments, 70% of marks scored from Test, 20% of marks scored in Lab-Works.

The grade will be calculated according to the:

(i) score >= 90 : "A"

(ii) score >= 80 : "B"

(iii) score >= 70 : "C"

(iv) score >= 60 : "D"

Enter Marks Obtained from 5 Subjects and calculate the total class average and letter grade of the class.

F-2

Hall Ticket Number:

1. Answer the following:
   (a) Explain Python character set.   CO1
   (b) Explain range function.   CO1
   (c) What is continue statement in Python?   CO1
   (d) Define function.   CO2
   (e) Explain binary files in Python.   CO2
   (f) Which keyword is used for writing function in Python? CO2
   (g) Do python lists store values or pointers?   CO3
   (h) What does "del" do?   CO3
   (i) Write the difference between "remove" and "pop" in pyhon list? CO3
   (j) What is tail() in pandas?   CO4
   (k) Differentiate local minima and local maxima.   CO4
   (l) What is ndim in pandas?   CO4
   (m) What does fillna() function does?   CO4
   (n) What does info() function does?   CO4

UNIT – I

2. (a) What are operators in Python? Explain arithmetic operators in detail.   (7M) CO1
   (b) List different loop control statements in python? Explain any one in detail.   (7M) CO1

(OR)

3. (a) Explain break and continue function in python. Write one example program which contains these statements. (7M) CO1

   (b) List the inbuild functions in python. Explain chr and ord functions with example. (7M) CO1

UNIT – II

4. (a) What are inbuilt Python functions for string? Explain any two in detail with example. (7M) CO2

   (b) Demonstrate a Python program to reverse a string. (7M) CO2

(OR)

5. (a) Demonstrate a Python function that accepts a string and counts the number of upper and lower case letters. (7M) CO2

   (b) How to access and manipulate files and directories in a disk? (7M) CO2

UNIT – III

6. (a) Explain how to pass a list to a function? Also explain how to return a list from a function? (7M) CO3

   (b) What is need of dictionary? Explain how to format the dictionary, how to delete the item from dictionary and how to compare two dictionaries. (7M) CO3

(OR)

7. (a) Explain indexing and slicing operations in tuples. (7M) CO3

   (b) Write a short note on passing arguments and variable length arguments in tuples. (7M) CO3

UNIT – IV

8. (a) What is NumPy? What are various features of NumPy. (7M) CO4

   (b) List the advantages NumPy Arrays have over (nested) Python lists? (7M) CO4

(OR)

9. (a) You are given a dataframe with prices of cheeses. However, the dataframe is missing values in the price column. Write a function to impute the median price in place of missing values. (7M) CO4

   (b) What is hierarchical indexing? Explain with example. (7M) CO4

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CE315(CDOL1) (R20)