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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Information Science and Engineering **Duration: 3 hrs.**
Course Code: 20IS5PEAPP **Max Marks: 100**
Course: Advanced Python Programming **Date: 07.03.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

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UNIT - I

1 a) Write a note on any five file access modes supported by Python while creating a file with suitable python code. **06**

b) Develop a Python code to reverse the content of one file and store it in another file. And also append the string "BMSCE-ISE" at the end of the output file and print its contents. **06**

c) With a suitable example illustrate Pickling and Unpickling concept. **08**

UNIT - II

2 a) Develop a python program on the scenario given below: **10**
Create a Student table with attributes such as std_usn, std_name, std_branch, std_m1, std_m2, std_m3, std_total, std_average.
Insert at least three values into the database.
Demonstrate the database concepts for the following scenario:
A college management wants to compute the total and average marks of each branch of students.

b) For the given data base of an employee. Write a function to insert the values in to the data base. Management wants to give the promotion to the receptionist level and increase the salary and write a function to display the updated salary. **10**

id	Name	Post	Salary
1	Sumit	Manager	70000
2	Rahul	Assistant manager	40000
3	Neha	Receptionist	30000
4	Manish	Electrician	20000
5	parul	Accountant	50000

UNIT - III

3 a) Explain numpy array manipulation for reshaping of 1D, 2D and 3D arrays with examples. **10**

b) Write a NumPy program to convert the values of Centigrade degrees into Fahrenheit degrees and vice versa. Values are stored into a NumPy array. **05**

c) Write a Python program to create two 3x3 matrices and to perform addition and subtraction of these matrices. **05**

OR

4 a) Write a NumPy program to add a border (filled with 2's) around an existing array. **04**

Original array:
[[0. 0. 0.]
[0. 0. 0.]
[0. 0. 0.]]
Expected Output:
2 on the border and 0 inside in the array
[[2. 2. 2. 2. 2.]
.....
[2. 2. 2. 2. 2.]]

b) Develop a Python program to perform the following operations on Numpy array: **10**
i) Create a Numpy array of 3 rows and 2 columns and print the array
ii) Reshape the array to 2 rows and 3 column and print it
iii) Print the last column using the slicing concept
iv) Print the sum, maximum and minimum of each row
v) Print the array sorted in column wise

c) Illustrate broadcasting in NumPy with a use case scenario. **06**

UNIT - IV

5 a) Develop a Python program to create the dataframe from the below data **10**

	attempts	name	qualify	score
1	1	Anastasia	yes	12.5
2	3	Dima	no	9.0
3	2	Katherine	yes	16.5
4	3	James	no	NaN
5	2	Emily	no	9.0
6	3	Michael	yes	20.0

Write the Python code to do the following tasks:
i) Display last 3 rows
ii) Display rows from 2 to 4
iii) Display the score of Katherine
iv) Display top 2 rows of name and score columns
v) Modify the labels from 1 - 6 to 101 - 107 and display it

b) What are series in Python? Explain how the series can be created using arrays and dictionaries in Python with an example program. **05**

c) Create a data frame by reading data.csv file. The data.csv file contains information about Name, Gender, Age , Place. Write a Python program to create data frame for data contained in data.csv and to **05**
i) display all data
ii) display number of rows and columns
iii) display people who are above 30 years of age

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UNIT - V

6	a)	Illustrate with an example various types of joins implemented in Pandas.	**05**
	b)	With an example, explain the following methods used along with data frames by writing syntax. i) shape ii) describe iii) merge iv) dropna v) rename vi) sort_values	**10**
	c)	Write a note on Selecting DataFrame rows using logical operators with an example.	**05**

OR

7	a)	Create two data frames and show the working of concat() and append () functions in Python.	**08**
	b)	Explain how to handle duplicate data sets in Python data frames.	**05**
	c)	Write a note on how to select specific values in columns and groupby with an example program by writing syntax.	**07**

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