CBCS SCHEME

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BDS306B

Third Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Python Programming for Data Science

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain the elements of Python language with suitable example.	10	L2	CO1
	b.	Write a Python program to find the area of circle by getting input from user.	05	L2	CO1
	c.	Explain arithmetic expression. Interpret the output of the statement : 'Python' + 'Program' + 100. Justify the answer.	05	L2	CO1
		OR			
Q.2	a.	Explain Python block structure with suitable example.	05	L2	CO1
	b.	Describe operators in Python and explain the rules of precedence used by Python to evaluate an expression.	10	L2	CO1
	c.	Write a Python program to swap two numbers without using temporary variable.	05	L2	CO1
		Module – 2			
Q.3	a.	Illustrate the decision control structures used in Python using suitable examples.	10	L2	CO2
	b.	Write a program to input a score between 0.0 and 1.0 . If the score is out of range print an error message and exit. If the score is between 0.0 and 1.0 print a grade using the following table: Score: >=0.9 | >=0.8 | >=0.7 | >=0.6 | <0.6 Grade: A | B | C | D | F	05	L2	CO2
	c.	Differentiate between continue and pass statements.	05	L2	CO2
		OR			
Q.4	a.	Illustrate the different looping statements used in Python.	10	L2	CO2
	b.	Write a program to reverse a number and also find the sum of digits in the reversed number. Prompt the user for input.	05	L3	CO2
	c.	Describe the range( ) function in Python.	05	L2	CO2
		Module – 3			
Q.5	a.	'List are mutable'. Justify the statement with example. Explain the different operations in the list.	10	L2	CO3
	b.	Explain the concept of slicing and indexing in LIST.	05	L2	CO2
	c.	Write a Python program to rotate right about a given position in that list and display them.	05	L3	CO3
		OR			
Q.6	a.	Explain Python Dictionaries. Illustrate different operations in Dictionary with suitable examples.	10	L2	CO3
	b.	Develop a Python program to determine and print the number of duplicate words in a sentence using Dictionary.	05	L3	CO3
	c.	Differentiate between Tuple and Set.	05	L2	CO3

<table>
<tr><td colspan="6">Module – 4</td></tr>
<tr><td>Q.7</td><td>a.</td><td>Explain ndarray (N-dimensional array). Illustrate basic operations applied to them with suitable example.</td><td>10</td><td>L2</td><td>CO4</td></tr>
<tr><td></td><td>b.</td><td>Explain the concept of indexing and slicing in NumPy array.</td><td>05</td><td>L2</td><td>CO4</td></tr>
<tr><td></td><td>c.</td><td>Write a Python program to read NumPy array and print row(sum, mean, std) and column(sum, mean, std).</td><td>05</td><td>L3</td><td>CO4</td></tr>
<tr><td colspan="6">OR</td></tr>
<tr><td>Q.8</td><td>a.</td><td>Explain about Dataframes. Illustrate how to define a dataframe and how to access and assign the values in it with suitable examples.</td><td>10</td><td>L2</td><td>CO4</td></tr>
<tr><td></td><td>b.</td><td>Write a Pandas program to create and display a Dataframe from a specified dictionary data which has the index labels. Sample out as follows:
<table>
<tr><th>Label</th><th>attempts</th><th>name</th><th>qualify</th><th>score</th></tr>
<tr><td>a</td><td>1</td><td>James</td><td>no</td><td>NaN</td></tr>
<tr><td>b</td><td>3</td><td>Emily</td><td>no</td><td>9.0</td></tr>
<tr><td>c</td><td>2</td><td>Mathew</td><td>yes</td><td>14.5</td></tr>
<tr><td>d</td><td>3</td><td>Kevin</td><td>no</td><td>8.0</td></tr>
<tr><td>e</td><td>2</td><td>Katherine</td><td>yes</td><td>12.5</td></tr>
<tr><td>f</td><td>3</td><td>Jonas</td><td>yes</td><td>19.0</td></tr>
<tr><td>g</td><td>1</td><td>Laura</td><td>no</td><td>NaN</td></tr>
<tr><td>h</td><td>1</td><td>Dima</td><td>yes</td><td>16.5</td></tr>
</table></td><td>05</td><td>L2</td><td>CO4</td></tr>
<tr><td></td><td>c.</td><td>Explain the operations between Dataframe and series.</td><td>05</td><td>L2</td><td>CO4</td></tr>
<tr><td colspan="6">Module – 5</td></tr>
<tr><td>Q.9</td><td>a.</td><td>Explain how to read the data contained in a CSV or text file with suitable examples.</td><td>10</td><td>L2</td><td>CO5</td></tr>
<tr><td></td><td>b.</td><td>Write a Python program to read and print in the console CSV file.</td><td>05</td><td>L2</td><td>CO5</td></tr>
<tr><td></td><td>c.</td><td>Demonstrate reading of data from HTML files.</td><td>05</td><td>L3</td><td>CO5</td></tr>
<tr><td colspan="6">OR</td></tr>
<tr><td>Q.10</td><td>a.</td><td>Explain various phases of data preparation.</td><td>10</td><td>L2</td><td>CO5</td></tr>
<tr><td></td><td>b.</td><td>Write a Python program to read a HTML file with basic tags and construct a dictionary and display the same in the console.</td><td>10</td><td>L3</td><td>CO5</td></tr>
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