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| **Introduction to Programming** | | |
| Total Marks: 30 | | |
| **Section A** | | |
| 1. | Consider a list containing 4 objects: l1 = [‘apple’, 2, 4.5, (‘a’, ‘b’, ‘c’)]  For each object, please state its type and index. | 2 marks |
| 2. | What is the difference in the output between the following statements in Python?  a. int(9.0)  b. int(‘9’) | 2 marks |
| 3. | Rewrite the following in python:  4 × (35 ÷ 7)  √16 | 2 marks |
| 4. | Consider the folowing array:  arr = np.array( [[ 1, 2, 3],  [ 4, 2, 5]] )  Please state the output of the statement:  arr.ndim  What does the output indicate? | 2 marks |
| **Section B** | | |
| 5. | Consider the following program:  x = ['ab', 'cd']  for i in x:  i.upper()  print(x)  What is the final value of X? | 3 marks |
| 6. | The following function compares two number and prints the larger number:  def printMax(a, b):  if a > b:  print(a, 'is maximum')  else:  print(b, 'is maximum')  What is the output if the following line is executed?  printMax(4, 4)  How would you modify the function to result in a more consistent output? | 3 marks |
| 7. | Rewrite the following program as a list comprehension:  list1 = map(lambda x: x\*\*2, range(3, 50) | 3 marks |
| 8. | What will the output of the following program be?  a = {}  a[1] = 1  a['1'] = 2  a[1]=a[1]+1  count = 0  for i in a:  count += a[i]  print(count) | 3 marks |
| 9. | Reshape the array: [2,3,6,3.4,6,3]  into a 2X3 array. After reshaping please get the square of all the elements | 3 marks |
| **Section C** | | |
| 10. | Write a function which takes 2 digits, X,Y as input and generates a 2-dimensional array. The element value in the i-th row and j-th column of the array should be i\*j.  Example:  If the input to the function is (3,5);  The output should be:  [[0, 0, 0, 0, 0],  [0, 1, 2, 3, 4],  [0, 2, 4, 6, 8]] | 7 marks |