

22395

12425

03 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answer with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following:** **10**
- a) List any two object oriented features supported by Python.
 - b) Differentiate between tuple and list. (Any two points)
 - c) List any two Python packages.
 - d) Define terms:
 - i) Class
 - ii) Object
 - e) State any two types of searching techniques.
 - f) Define the terms:
 - i) Tree
 - ii) Graph.
 - g) Define the terms:
 - i) Queue
 - ii) Linked list.

P.T.O.

- 2. Attempt any FOUR of the following:** **12**
- a) Explain directed graph with example.
 - b) Develop a program for linear search
 - c) Write a program to print the following pattern:
1
1 2
1 2 3
1 2 3 4
 - d) Describe any three methods of lists in Python.
 - e) State any three features of Pandas.
- 3. Attempt any FOUR of the following:** **12**
- a) Write a program to create dictionary of students that includes roll - no. and name:
 - i) Add three students in above dictionary.
 - ii) Delete information of roll-no = 1.
 - b) Explain binary trees with suitable example.
 - c) Write a Python program to print factorial of a given number using for loop.
 - d) What is the array? Explain its types with example.
 - e) Describe data structures in Python.
- 4. Attempt any THREE of the following:** **12**
- a) Write a Python program to implement queues.
 - b) Explain four tree terminologies with example.
 - c) Explain an four built in functions of Numpy with example.
 - d) Develop a program for single inheritance.
 - e) Describe set operations in Python with example.

- 5. Attempt any THREE of the following:** **12**
- a) Develop Python program for binary search.
 - b) Write a Python program to calculate area of rectangle and area of square using method overloading.
 - c) Explain pre-order, post-order and in-order tree traversing with example.
 - d) Write a Python program to display 1 to 5 numbers using while loop.
 - e) Explain Modules in Python with an example.
- 6. Attempt any TWO of the following:** **12**
- a) Explain two methods of each:
 - i) Numpy
 - ii) Pandas
 - iii) Matplotlib.
 - b) Develop a program to create a singly linked list with 3 nodes.
 - c) Write the output of the following:
 - i)

```
>>> a = [2, 5, 1, 3, 6, 9, 7]
>>> a [2:6] = [2, 4, 9, 0]
>>> print(a)
```
 - ii)

```
>>> b = ["Hello", "Good"]
>>> b.append("Data Structure")
>>> print(b)
```
 - iii)

```
>>> t1 = [3, 5, 6, 8]
>>> print(t1[2])
>>> print(t1[-1])
>>> print(t1[2:])
>>> print(t1[:])
```
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