

B.Sc. (Data Science) (NEP) First Year Semester-I  
**BSCDS011 : Data Structure and Algorithm Using Python**

P. Pages : 2

Time : Three Hours



**GUG/W/24/15255**

Max. Marks : 80

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1. a) Explain types of variable and types of methods. 8  
b) What do you mean by “Object Oriented Programming” (OOP’s)? 8

**OR**

- c) Explain classes and objects with an example. 8  
d) What is inheritance? Explain its type. 8
2. a) Explain the terms. 8  
i) Set ii) Tuple  
iii) List iv) Dictionary  
b) Explain Data Structure with its types in detail. 8

**OR**

- c) What is python specific Data structure explain in details. 8  
d) Explain the terms 8  
i) String ii) Slicing
3. a) Explain all operations of array with example in detail. 8  
b) Explain sorting in detail with its types. 8

**OR**

- c) What is array and explain its types in brief. 8  
d) Explain linear search and binary search in detail. Differentiate between linear search and binary Search. 8
4. a) Explain all Applications of Queue in detail. 8  
b) Explain Stack and Queue in brief. 8

**OR**

- c) What are the types of Linked List explain in detail. **8**
- d) Explain the Priority Queue in detail. **8**

**5. Write any two of following Questions: -**

- |    |  |          |
|----|--|----------|
| a) | Explain all tree terminologies in detail.  | <b>8</b> |
| b) | Describe Tree Structure and its Properties.  | <b>8</b> |
| c) | In AVL Tree, Described the following:-   | <b>8</b> |
|    | <div style="display: flex; justify-content: space-around;"> <span>i) Insertion</span> <span>ii) Deletion</span> </div>                       |          |
| d) | Explain the terms in detail.   | <b>8</b> |
|    | <div style="display: flex; justify-content: space-around;"> <span>i) Breadth First Search</span> <span>ii) Depth First Search.</span> </div> |          |
| e) | Explain BST and its implementation in brief.   | <b>8</b> |

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