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BTECH**(SEM V) THEORY EXAMINATION 2023-24****PROGRAMMING, DATA STRUCTURES AND ALGORITHMS USING PYTHON****TIME: 3 HRS****M.MARKS: 100****Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 10 = 20**

Qno.	Question	Marks	CO
a.	State any two characteristics of python programming language.	2	1
b.	Tell how to initialize a string in python?	2	1
c.	Differentiate between an array and a list.	2	2
d.	Explain slicing.	2	2
e.	Define a function in python.	2	3
f.	Define global scope with respect to functions.	2	3
g.	What is a stack?	2	4
h.	Define a queue in python.	2	4
i.	Explain Big-O notation.	2	5
j.	Define dynamic programming.	2	5

SECTION B**2. Attempt any three of the following:****10 x 3 = 30**

a.	Explain in detail the various data types in python?	10	1
b.	Explain the use of tuples and dictionaries. Use valid examples and their associated operations.	10	2
c.	What is a file handle. Explain its utility and significance with examples.	10	3
d.	Explain the various commands related to queues and stacks in python.	10	4
e.	Write a program for multiplication of two matrices in python.	10	5

SECTION C**3. Attempt any one part of the following:****10 x 1 = 10**

a.	Summarize – break, continue and pass with examples.	10	1
b.	Briefly explain the functions of python IDE's.	10	1

4. Attempt any one part of the following:**10 x 1 = 10**

a.	Explain various list operations with suitable examples.	10	2
b.	Explain and write the program for selection sort.	10	2

5. Attempt any one part of the following:**10 x 1 = 10**

a.	Explain the various commands related to reading of files in python.	10	3
b.	Summarize with examples write related commands in python programming.	10	3

6. Attempt any one part of the following:**10 x 1 = 10**

a.	Briefly explain classes and objects in python. Write any valid program to explain them.	10	4
b.	Summarize search trees in python. Briefly explain binary trees.	10	4

7. Attempt any one part of the following:**10 x 1 = 10**

a.	Write a python program to calculate simple greatest common divisor (gcd) and explain it.	10	5
b.	Summarize a python program for Euclid's algorithm for gcd.	10	5