



PAPER ID-410609

Printed Page: 1 of 2
Subject Code: KME056

Roll No:

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B. TECH.
(SEM V) THEORY EXAMINATION 2021-22
PROGRAMMING, DATA STRUCTURES AND ALGORITHMS USING PYTHON

Time: 3 Hours

Total 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

- a. Define range() function.
- b. Explain the characteristics of python language
- c. Outline the features of tuple data structure?
- d. Explain the syntax of "for- loop"
- e. Write a short note on dictionary data type in Python?
- f. What are lambda functions in Python?
- g. Explain the List Slicing and List Mutability.
- h. Calculate y if x = range(10) and y = x[::3]
- i. Describe Asymptotic Notation.
- j. Explain memorization.

SECTION B

2. Attempt any three of the following:

10 x 3 = 30

- a. Explain the importance of break and continue keyword with the help of python program.
- b. Apply quick sort algorithm in the list [65,81,37,45,62,13,7,8,12,55]. Also write its algorithm and analyze its complexity
- c. Write about Errors and Exception Handling in Python programming?
- d. Create a binary search tree of the given list [12,87,23,12,25,2,13,76,54,32] and then delete 12 element from it . Show all the steps
- e. Explain classes & objects in python. Also give its example.

SECTION C

3. Attempt any one part of the following:

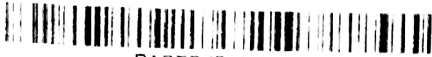
10 x 1 = 10

- (a) Give short note on the following?
 - i) Python statement
 - ii) Multiline statement
 - iii) Python Indentation
 - iv) Python comments
- (b) Explain -filter(),map(),reduce() functions with example

4. Attempt any one part of the following:

10 x 1 = 10

- (a) Explain binary search. Also write the python code of it.
- (b) Explain the term sorting. Discuss and create a python program to implement merge sort.



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5. Attempt any *one* part of the following: 10 x 1 = 10
- (a) Explain the List Accessing Methods and List Comprehension.
 - (b) Describe about variable length arguments with suitable program.
6. Attempt any *one* part of the following: 10 x 1 = 10
- (a) Explain Queue data structure with its operation
 - (b) Explain stack data structure with its operation
7. Attempt any *one* part of the following: 10 x 1 = 10
- (a) Describe dynamic programming. Also explain Longest common subsequence problem's solution using dynamic programming
 - (b) Explain simple GCD problem & ways to improve it.

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