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B.TECH.
(SEM III) THEORY EXAMINATION 2022-23
PYTHON PROGRAMMING

Time: 3 Hours

Total Marks: 50

Note: Attempt all Sections. If you require any missing data, then choose suitably.**SECTION A****1. Attempt all questions in brief.****1x10 = 10**

- (a) Explain the Programming Cycle for Python in detail.
- (b) Describe the concept of List Slicing with a suitable example.
- (c) Show the way to import the module in python.
- (d) Differentiate between Python Arrays and lists?
- (e) Define floor division with an example.
- (f) Explain the difference between 'append' and 'extend' in Python?
- (g) What is a dictionary in Python?
- (h) What is object-oriented programming (OOP) in Python? Give an example.
- (i) What will be the output of the following python code

```
def count1(s):
    vowels = "AEIOUaeiou"
    count = 0
    for c in s:
        if c in vowels:
            count += 1
    return count
print(count1('I love India'))
```

- (j) What will be the output of the following code?


```
list1 = ['M', 'o', 'n', 'k', 'y']
print("@".join(list1))
```

SECTION B**2. Attempt any three of the following:****5x3 = 15**

- (a) Demonstrate five different built in functions used in the string. Write a program to check whether a string is a palindrome or not.
- (b) Explain the following loops with a flow diagram, syntax, and suitable examples.
 - I) For
 - II) while
- (c) Explain the continue, break, and pass statements with a suitable example.
- (d) Develop a program to calculate the reverse of any entered number.
- (e) Explain the list Comprehension with any suitable example.

SECTION C

3. **Attempt any *one* part of the following:** **5x1 = 5**
- (a) Illustrate Unpacking Sequences, Mutable Sequences, and List comprehension with examples.
 - (b) Explain the lambda function. How it is helpful in the higher order function. Explain map() function with a suitable example.
4. **Attempt any *one* part of the following:** **5x1 = 5**
- (a) Discuss the different types of argument-passing methods in python. Explain the variable length argument with any suitable example.
 - (b) Write short notes on the following with a suitable example
I) Encapsulation II) Inheritance
5. **Attempt any *one* part of the following:** **5x1 = 5**
- (a) Demonstrate the file handling procedure in detail. Write a python code to create a file with 'P.txt' name and write your name and father's name in this file and then read this file to print it.
 - (b) Demonstrate the 'Sieve of Eratosthenes' theorem and write the python function to print prime numbers between 1 to 100.
6. **Attempt any *one* part of the following:** **5x1 = 5**
- (a) Develop and write the python code of selection sort to sort 41,65,43,91,12,14,62 elements. Also, explain its complexity.
 - (b) Explain Binary search with its python code and complexity.
7. **Attempt any *one* part of the following:** **5x1 = 5**
- (a) Explain the importance of Exception handling in any object-oriented programming language. Explain try exceptions and finally block with any suitable example.
 - (b) Summarize the 'Tower of Hanoi' puzzle and write its recursive function to implement it.