

- (c) What is the output of following python code? 2
- ```
def func():
    l1 = list()
    l2 = []
    for i in range(0,5):
        l1.append(i-1)
        l2.append(i+5)
    l1, l2 = l2, l1
    print(l1)
    print(l2)
func()
```
8. (a) What is recursion? What are the different parts of a recursive function? 2
- (b) Write a python program to find the gcd of two numbers, using recursion only. 2
- (c) Write a recursive function in python to search an element of a list using binary search technique. 2
9. (a) Explain three different access modes for opening the file in python along with examples. 2
- (b) Write a python program to copy the contents of File1 by reading it, into File2 by creating it and handle the error if either File1 doesn't exist. 2
- (c) Write the type of error that will occur when following operations are performed: 2
- (i) `m=Input('Enter value')` (iii) `2+'5'`  
(ii) `int('Hello')` (iv) `28/(14-5-4-3-2)`
10. (a) Define a class *Person* with following data attributes: *name*, *date of birth*, and *address*. Moreover, you need to use `__init__` for initialization of data members. Farther, explain the use of the `__init__` method. 2
- (b) Define a class *Rectangle*. The class should contain sides: length and breadth of the rectangle as data members. It should support following methods: 2
- `__init__` for initialization of data members.
  - `setLength` for updating the length of the rectangle.
  - `setBreadth` for updating the length of the rectangle.
  - `area` for finding the area of the rectangle.
  - `perimeter` for finding the perimeter of the rectangle.
- (c) What is operator overloading? Explain how the + operator is overloaded in python with an example. 2

## END SEMESTER EXAMINATION, JANUARY-2023 PROGRAMMING IN PYTHON (CSE 3142)

**Programme: B.Tech (CSE)**

**Full Marks: 60**

**Semester: 5th**

**Time: 3 Hours**

| Subject/Course Learning Outcome                                                                               | *Taxonomy Level | Ques. Nos.                      | Marks |
|---------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------|-------|
| Understand the basic programming syntax, semantics and building blocks of python                              | L1              | 1(a), 2(a, b), 3(a), 4(a), 8(a) | 12    |
| Develop python applications using the programming constructs like control structures, functions and strings   | L3              | 1(c), 3(b), 5(a), 5(b), 8(b)    | 10    |
| Analyze, debug and test the programs and correctly predict their output                                       | L2, L4          | 1(b), 2(c), 3(c), 4(b, c), 5(c) | 12    |
| Illustrate the process of structuring the data using lists, sets, tuples and dictionaries                     | L2, L3          | 6(a, c), 7(a, b, c)             | 10    |
| Solve the real life problems using object oriented concepts, modular approaches, files and exception handling | L3              | 9(a, b, c), 10(a, b, c)         | 12    |
| Design application using sorting, searching and the concept of stack, queues, linked lists and trees          | L3              | 6(b), 8(c)                      | 4     |

\*Bloom's taxonomy levels: Knowledge (L1), Comprehension (L2), Application (L3), Analysis (L4), Evaluation (L5), Creation (L6)

**Answer all questions. Each question carries equal mark.**

- (a) Differentiate between the below-mentioned operators in python. 2

  - 'and' and '&'
  - 'or' and '|'
- (b) Write a python program to swap two integers without using arithmetic operators and temporary variable. 2

(c) What does the following python program print? 2

```
answer = ((not (9 == 8)) and ((7 + 1) != 8)) or (6 < 4.5)
print(answer)
```
- (a) Differentiate between "for" loop and "while" loop using appropriate examples. 2

- (b) What is “conditional expression” in python? Write a “conditional expression” for the following python code?  
 if (num % 2 == 0):  
     print(“Even Number”)  
 else:  
     print(“Odd Number”)      2
- (c) What is the output of the following python code?      2  
 number = 123456  
 a, b = 0, 0  
 while(number > 0):  
     digit = number % 10  
     if (digit % 2 == 0):  
         a += digit  
     else:  
         b += digit  
     number //= 10  
 print(a, b)
3. (a) What does a function return by default in python?      2  
 Write a function which returns area of a circle.
- (b) Write a python function which takes co-ordinates of three points as input and returns true if points are collinear otherwise returns false.      2
- (c) def fun(a=0,b=1):      2  
     return a\*\*b + b\*\*a  
 What will be the output for each call made below?  
 a) fun(2, a=3)  
 b) fun(b=3, a=2)  
 c) fun()  
 fun(1,2)
4. (a) What is difference between step and next command of Python debugger pdb?      2
- (b) Find the logical error in following function which returns the factorial value of an integer n.      2  
 def factorial(n):  
     fact=1  
     for i in range(1,n):  
         fact=fact\*i  
     return fact
- (c) What is the output of following python code?      2  
 x = 10  
 def f():  
     x = 20  
 def g():  
     nonlocal x

```
x = 30
print(x)
print(x)
g()
f()
print(x)
```

5. (a) Differentiate between split () and partition () function in string.      2
- (b) Write python code to read a sentence as an input parameter and count the number of words in the sentence.      2  
 For Example: if the sentence is “Programming in python” then the number of words is 3.
- (c) What is the output of following python code?      2  
 import re  
 string1 = "Regular expression defines a pattern"  
 r1 = re.findall(r"^\w+",string1)  
 print(r1)  
 print((re.split(r'\s',string1)))
6. (a) Write a lambda expression to compute average marks obtained by a student in three subjects, say S1, S2, and S3.      2
- (b) Write a python script to find the kth smallest element of a list using *Bubble Sort* technique.      2
- (c) i. What is the output of following python code?      2  
 n1, n2 = 6, 9  
 commonFactors = {i for i in range(1, min(n1+1, n2+1))  
     if(n1 % i == 0 and n2 % i ==0)}  
 print(commonFactors)
- ii. What is the output of following python code?  
 a = [1, 2, 3, 4, 5]  
 c = [x\*\*2 + y\*\*2 for x, y in zip(a, a)]  
 print(c)
7. (a) State the difference between set and dictionary with suitable examples.      2
- (b) Write a function that takes a number as an input parameter and returns the correspond text in words, for example, on input 452, the function should return 'Four Five Two'.      2