# MANIPAL INSTITUTE OF TECHNOLOGY, MANIPAL 576104
## (Constituent College of Manipal University)

**FOURTH SEMESTER B.Tech. (CCE) DEGREE MAKE UP EXAMINATION MAY– 2016**
**SUBJECT: ADVANCED PROGRAMMING TECHNOLOGIES– ICT 2252**
**(REVISED CREDIT SYSTEM)**

| TIME: 3 HOURS | 30/07 /2016 | MAX. MARKS: 50 |
|---|---|---|

### Instructions to candidates

- Answer **FIVE FULL** questions.
- Missing data, if any, may be suitably assumed.

1A. Write a complete Python program to do the following:
- i. Create a dictionary which stores registration number as key and value is the list, which is of the form [Name, Semester, Section, Department]. Read the details of "N" students from the user and store it in the dictionary.
- ii. Read registration number from user and display students details using the dictionary created.
- iii. Display all the student details where the student name contains the word "Gupta".
- iv. Read the semester from the user and display students which belongs to the same semester.
- v. Display the student details department wise.

1B. Write a generator function which takes an integer n as a parameter and counts *down* from n to 0.

1C. What is the output of the following code? Justify           (5+3+2)

```
def put(a,*b,**c):
    print(a)
    for i in b: print(i)
    print(len(b))
    for i in c: print(i)
put(1,[4,5,(6,5),{1:'one',2:'two'}],'testing',x=11,y=22,z=33)
```

2A. Create a Python class named SchoolMember in a module School. The SchoolMember contains name, age as data members, constructor, destructor and display methods. Derive a class named Teacher from SchoolMember class. Teacher class should be present in Member1 module. The Teacher class contains salary as data member, constructor, destructor and display method. Derive another class named Student from SchoolMember class. Student class should be present in Member2 module. The Student class contains marks as data member, constructor, destructor and display method. The derive classes should make use of the base class's constructor and display method during the construction of objects and display operation.

2B. Explain ruby iterators along with the examples for each.

2C. Write a Python program to display the sparse matrix using dictionaries.        (5+3+2)

3A. Write a Ruby program to simulate the operations (add items, remove items, display) on online shopping cart.

3B. What is the out put of the following code? Justify

```
def compute(n):                           v /= 2
    if n in cache:                        cache[n] = v
        return cache[n]
    if n > 5:                   print(compute(1))
        n = 5                   print(compute(2))
    v = n ** n                  print(compute(1))
    if v > 25:                  print(compute(2))
        return v
    cache = {}
```

3C. Define a lambda function which takes a string as a parameter and return a string with the unique letters in the input string. (5+3+2)

4A. Write a Python program to do the following:
   i. Create a nested list.
   ii. Inner list has sentence with set of words.
   iii. Check the sentence is palindrome or not.
   iv. Capitalize each word and display.
   v. Concatenate all palindrome sentences and display.

4B. Write a Python program to do the following:
   i. Create two sets
   ii. Read the set elements from the user
   iii. Perform union, intersection and difference operations on these sets and display the result.

4C. Differentiate between sets and tuples in Python. (5+3+2)

5A. Write a Python program to do the following:
   i. Define the calculator function which takes three parameters namely , an arithmetic operation (which can be addition, subtraction, multiplication or division and is addition by default), an output format (which can be integer or floating point, and is floating point by default. Division should be floating-point division) and any number of values.
   ii. The function should apply the operation to the first two numbers, and then apply it again to the result and the next number, and so on. For example, if the numbers are 6, 4, 9 and 1 and the operation is subtraction the function should return 6 - 4 - 9 - 1. If only one number is entered, it should be returned unmodified. If no numbers are entered, display error message.
   iii. Call the function with the following parameters:
      1. 2,3.0
      2. 2,3,5,6.4,7.6 output format is integer
      3. 2.4, 3,8 operation is division
      4. 1.6,2.8,3,7,9 operation is multiplication and output format is integer
5B. Explain along with examples the syntaxes used to define hash in Ruby.
5C. What is the output of the following code? Justify. (5+3+2)

```
x = 0
def outer():
    x = 1
    def inner():
        nonlocal x
        x = 2
        print("inner:", x)
    inner()
    print("outer:", x)
outer()
print("global:", x)
```