MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

IV SEMESTER B.TECH. (COMPUTER AND COMMUNICATION ENGINEERING)
END SEMESTER EXAMINATIONS, APRIL / MAY 2019

SUBJECT: ADVANCED PROGRAMMING TECHNOLOGIES [ICT 2252]
REVISED CREDIT SYSTEM
(26/04/2019)

Time: 3 Hours   MAX. MARKS: 50

Instructions to Candidates:
- ❖ Answer **ALL** the questions.
- ❖ Missing data, if any may be suitably assumed.

1A. Write a Python complete program by creating a class to get all possible unique subsets from a set of distinct integers.

Sample Input : [4, 5, 6]

Sample Output : [[], [6], [5], [5, 6], [4], [4, 6], [4, 5], [4, 5, 6]]   **5**

1B. Write a Python program to do the following:
- i. Read 'n' employee details from user. Store each employee details as a tuple : (id, name, salary, department.)
- ii. Store each tuple in a list
- iii. Read employee id from user, search the record based on id given by the user and display the result.   **3**

1C. Write a Ruby program to remove single line comment using regular expressions.   **2**

2A. Develop a voting application using Python with following functionalities:
- i. Add candidates
- ii. Register voters (constraint: age>18, nationality Indian)
- iii. Vote
- iv. Result   **5**

2B. Write a Python program to sort odd placed elements in increasing order and even placed elements in decreasing order using list comprehension.   **3**

2C. What is the output of the following code snippet?
```
>>>x=15.2;y=2
>>>print((x//y),(x**y))
>>>L=[1,2,3,4,5,6]
>>>print(L[::-2])
>>>print(L[-5:3])
>>>c=9+j5
>>>print(c.real,c.imag);
```
                    2

3A. Explain the following concepts of Python with an example for each.
- i. Deep copy
- ii. Packing and unpacking tuples
- iii. List membership operators   **5**

3B. Write a Python program that accepts a hyphen-separated sequence of words as input and prints the words in a hyphen separated sequence after sorting them alphabetically.   3

3C. With an example explain how dictionaries can be used as *caches*?   2

4A. Write a Ruby program to read a string from user and perform the following operations:
     i. Copy the words starting with consonants to a new string named **cons**. For example, if the input is "This is an example" then output string is "This"
     ii. Place the alternate words into a new string named **alt**. For example, if the input is "This is an example" then the output is "is example"
     iii. Reverse each word in a string. For example, if the input is "This is an example" then the output is "sihT si na elpmaxe".
     iv. Display all the palindrome words present in the input string.   5

4B. Write the output of the following Ruby code snippet.

```ruby
a=["Department","of","information","and","Communication", "Technology"]
h={1=>'mit',2=>'cce',3=>'ict',4=>'cse'}
a.each{|i| print i,' '}
puts
h.each{|i,j| print j,' '}
r=a.collect{|i| i+i}
print "\n",r,"\n"
4.times{ |i| print i,"\t" }
puts
10.upto(18){|i|  print i,"\t"}
puts
6.step(12,2) { |i|  print i,"\t"}
```
   3

4C. Differentiate sort and sorted functions of Python? Give an example for each.   2

5A. Write a python program to do the following.
     i. Create a text file, which has minimum eight lines.
     ii. Read the data from the file.
     iii. Store the data in dictionary form ie. line numbers as keys, string and total length of the string as values. Value is of type list.
     iv. Find the frequencies of the letters in the file and store it in a dictionary. Letters are represented as keys and frequencies represented as values.
     v. Print the result of iii and iv.   5

5B. Write a Python program which accepts a sequence of comma separated 5 digit binary numbers as its input and then checks whether they are divisible by 7 or not. The numbers that are divisible by 7 are to be printed in a comma separated sequence.   3

5C. What is the output of the following code? Write the steps.
```
>>> a={1,2,3}
>>> b=frozenset([3,4,5])
>>> a-b&a&b
```
   2