NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA
THEORY EXAMINATION
Question Paper

Month and Year of the Examination: May 2019
Semester: IV
Course No. CSPE-22
Time Allowed: Three hours
Total no. of pages used: 02

Programme: B.Tech(Computer Engg.)
Subject: Programming using Python
No. of Questions to be Attempted: 05
Total No. of Questions: 08
Maximum Marks:50

Unless stated otherwise, the Symbols have their usual meanings in context with the subject. Assume suitably and state, additional data required, if any.

The Candidates, before starting to write the solutions, should please check the Question Paper for any discrepancy, and also ensure that they have been delivered the question paper of **right course no**. and right subject title.

Q1 (a) Explain the following string functions with examples: *find(str), replace(), title(), strip(), lstrip(), rstrip(), split(), partition(), encode(), decode()*. **[5]**

(b) Write down the summary of operations that can be applied on lists. Explain following methods (in relation to List) with the help of examples: *insert, extend, append, clear, copy, index, remove, pop, sort*. **[5]**

Q2 (a) Explain the following set functions with example: *add, update, remove, clear, union, intersection, difference, and symmetric difference*. Also write programs to check subset and superset test. **[5]**

(b) What do you understand by tuple. Write down the summary of operations that can be applied on tuples with examples. Write a program to sort the (name, age, height) tuples by ascending order where name is string, age and height are numbers. The tuples are input by console. The sort criteria is: **[5]**

-Sort based on name;
-Then sort based on age;
-Then sort by score.
The priority is that name > age > height.

Q3 (a) With example show working of any five methods of dictionary. Write a Python script to merge two Python dictionaries into a new dictionary. **[5]**

(b) How to perform exception handling in python. Explain all keywords and methods related to exception handling. **[5]**

Q4 (a). What are mutable and immutable objects in python? Explain the following set functions with programming example*: items(), keys(), values(), clear() get(), copy(), and update()*. **[5]**

(b) Explain polymorphism with abstract base class in python. Write a program to show method overloading in python. **[5]**

Q5 (a) Write Python programs to rotate an image, to convert an image from color to grayscale and to convert an image from color to black and white. **[5]**

(b) Write programs to read CSV file and write to CSV file. How to append a tab separated new row in a given CSV file. **[5]**

Q6 (a) Give description of different file opening modes available in python with examples in detail. **[5]**

(b) Explain the following sys and os module functions with example: **[5]**

sys.stdin, sys.exit(1), sys.stdout(), sys.stderr(), sys.getrefcount(), os.listdir(), os.getcwd(), os.path(), os.path.basename, os.path.dirname.

Q7. (a) Define a base class Vehicle, having attributes registration number, make, model, and color. Also define classes *PassengerVehicle* and *CommercialVehicle* that derive from the class *Vehicle*. The *PassengerVehicle* class should have additional attribute for maximum passenger capacity. The *CommercialVehicle* class should have an additional attribute for maximum load capacity. Define *__init__* method for all these classes. Also define get and set methods to retrieve and set the value of the data attributes. **[5]**

(b) Explain constructor and destructor in python. Give programming example of default and parameterized constructors in python. Explain different types of inheritance in python with example also. **[5]**

Q8. Explain the following: **[2.5*4=10]**

a). Computer Vision and how a computer reads an image.

b). Different libraries available in Python for image processing with examples.

c). Different libraries available in Python for gaming with examples.

d). LEGB Scope rules.