Exam. Code : 105703
Subject Code : 1562

B.Sc. IT 3rd Semester

INTRODUCTION TO PYTHON

Paper—I

Time Allowed—3 Hours] [Maximum Marks—75

Note :— (1) Attempt any **five** questions.

(2) Use of Non-Programmable, Non-storage Calculator is permitted.

1. (a) Name Python Data Types. 5

(b) Write the output for the following code :

```
x = 10
y = 20
if (x > y):
print x + y
else :
print x – y
```

5

(c) Explain with code the use of Escape Sequence in Python 5

2. (a) What is use of *Dictionary* data type in Python ? 5

(b) Using Python code examples explain use of various ***if*** and ***if-then-else*** statements. 10

3. (a) Explain basic Object Oriented Programming concepts using Python code constructs. 10

   (b) Define a class Travel Plan in Python with the following descriptions :

   Private Members :

   Plan Code of type long

   Place of type character array (string)

   Number_of_travellers of type integer

   Number_of_buses of type integer. 5

4. (a) Write a Python program to highlight use of for loops. 8

   (b) Write python code to explain use of *Break* and *Continue* keywords in Loops. 7

5. (a) Write a Python program to get the largest number from a list. 7

   (b) Write a Python program that accepts a word from the user and reverse it. 8

6. (a) Write a note on using Files in Python. 5

   (b) Write a Python program to count the frequency of words in a file. 10

7. Using Python code highlight use Python Modules and Top Down Design. 15

8. Using Python code highlight use Python API for querying Database Tables. 15

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DATA STRUCTURE

Paper–II

Time Allowed—3 Hours] [Maximum Marks—75

Note :– Attempt **five** questions in all. All questions carry equal marks.

1. (a) Define Data-Structure. Explain various operations on data-structures along with examples. 2+6=8

   (b) What do you mean by time-space trade off ? Explain with suitable examples. 7

2. (a) How arrays are stored and represented in memory ? Explain various operations on linear arrays. 2+6

   (b) Write a pseudo code to demonstrate how multidimensional arrays are used. 7

3. (a) What is linked list ? Explain its various types along with their importance. 2+6

   (b) How quicksort technique is implemented to sort an array ? 7

4. (a) How linked lists are different from arrays ? Explain the advantages of using linked lists over arrays through examples. 8

   (b) Write pseudo code to convert infix arithmetic expression to polish notation and then its evaluation through example. 7

5. (a) Describe queue structure. How are they implemented using arrays and linked lists ? Explain with examples. 2+3+3

(b) Describe :

(i) Priorities of queues

(ii) Dequeues in detail. 7

6. (a) What is Tree ? Explain various terminologies along with their usage in solving problems using tree structure. 8

(b) What are Binary trees and Binary Search trees ? How are they represented in memory ? Explain. 7

7. (a) Define graph. Demonstrate its implementation in memory with example. 2+6

(b) Write what is sorting and perform that through Bubble Sort. 2+5

8. Write notes on :

(a) Algorithm complexity

(b) Linear and Binary search. 7.5×2=15

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B.Sc. IT 3rd Semester

SYSTEM ANALYSIS & DESIGN

Paper–III

Time Allowed—3 Hours] [Maximum Marks—75

Note :– Attempt any **five** questions. All questins carry equal marks.

1. Explain System Development Life Cycle and role of different stages. 15
2. Explain various steps involved in Requirement Analysis. 15
3. Write a note on Feasibility Study and its importance. 15
4. What are various information gathering tools ? Explain each. 15
5. Explain and differentiate between Modular and Structured Design. 15
6. Explain various steps involved in Implementation process of a project. 15
7. Classify various types of Testing and explain each. 15
8. What are various types of Maintenance Procedures ? Explain their role. 15

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Subject Code : 1565

B.Sc. IT 3rd Semester

ENVIRONMENTAL STUDIES—I

Paper—IV

Time Allowed—3 Hours] [Maximum Marks—50

Note :— Section–A (15 marks) : Attempt any **THREE** questions. Answer to the questions should be restricted to **2** pages.

Section–B (20 marks) : Attempt any **TWO** questions restricting your answers to **4** pages.

Section–C (15 marks) : Attempt any **ONE** question restricting your answer to **5** pages.

SECTION—A

Short notes on any **THREE** of the following :

1. Multidisciplinary nature of environmental studies.
2. Environmental impacts of mining activities.
3. Desertification.
4. Ecological succession.
5. Environmental ethics.

3×5=15

SECTION—B

6. What is the role of environmental studies in combating environmental degradation ?

7. Write a detailed note on how modern agriculture is responsible for environmental degradation.

8. Describe the structure and function of a forest ecosystem.

9. List various types of wastelands. Discuss how they can be reclaimed.

$2 \times 10 = 20$

SECTION—C

10. Discuss with the help of case studies the problems related to resettlement and rehabilitation of people with respect to various development projects.

11. Discuss the various causes and impacts of overexploitation of water resources. Suggest some measures for water conservation.

$1 \times 15 = 15$

Exam. Code : 105703
Subject Code : 9041

B.Sc. IT 3rd Semester (Old Sylb.—2016)

OBJECT ORIENTED PROGRAMMING USING C++

Paper—I

Time Allowed—3 Hours] [Maximum Marks—75

Note :— Attempt any **five** questions. All questions carry equal marks.

1. (a) Explain various preprocessor directives available in C++.

   (b) What is meaning of type conversion ? Explain different types of type conversion in C++.

2. Explain various control statement available in C++.

3. (a) What is meaning of function overloading ? Give an example.

   (b) Which are inline functions in C++ ? Explain with an example.

4. (a) What is Constructor ? What is constructor overloading ?

   (b) Explain different ways in which static keyword can be used in a class.

5. Write a program in C++ to count how many elements of an array are even, how many are odd and how many are zero.

6. What is need of operator overloading ? Which are various pitfalls of operator overloading ?

7. Which are different types of Inheritance in C++ ? Give problems associated with multiple inheritance.

8. (a) What is difference between structure and class in C++ ?

   (b) What is enumerated data type in C++ ? Give an example.