

43149

BT-3/D-24

ESSENTIALS OF INFORMATION TECHNOLOGY

Paper-ES-219A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each Unit-I to Unit-IV. All questions carry equal marks.

UNIT-I

1. (a) Describe the basic data types in Python. Provide examples of each. (7)
(b) Investigate the concept of functions in Python, including parameters, return values, and scope. Write a simple function that takes two numbers as arguments and returns their sum. (8)
2. (a) Illustrate how to use a while loop in Python? Write a program that counts from 1 to 10 and prints each number. (7)
(b) Write a python program to build a simple calculator. (8)

UNIT-II

3. (a) Discuss the process of identifying and fixing a bug in a program. Outline the steps a developer might take from discovering the bug to implementing a fix. (7)
- (b) Apply insertion sort on following data :
21, 51, 31, 71, 41, 92, 83, 53, 69. (8)
4. (a) Explain *five* commonly used string methods in Python. Provide code examples for each method. (7)
- (b) Describe the different types of charts available in pyplot and their applications. (8)

UNIT-III

5. (a) Discuss the various types of computer memory and their roles within the computer system. (7)
- (b) Explain the organization of a computer system, covering the CPU, memory hierarchy, and storage. Illustrate how these components interact to execute a program. (8)
6. (a) Describe the main functions of an operating system. Discuss different types of operating system with suitable examples. (7)

- (b) Explain the differences between IaaS, PaaS, and SaaS with examples of each. Discuss the types of services each model typically offers. Discuss the applications of parallel computing in different fields. (8)

UNIT-IV

7. (a) Discuss different types of keys in relational databases. Write SQL queries to (i) retrieve all records from a table, (ii) update a record, (iii) delete a record, and (iv) count the number of records in a table. (7)
- (b) Explain different types of joins with examples. (8)
8. (a) Describe the four main types of NoSQL databases. Provide *one* example of each type. (7)
- (b) What are the key differences between SQL and NoSQL databases? Describe five key features of MongoDB that make it suitable for handling large amounts of unstructured data. (8)
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