Exam. Code : 107203
Subject Code : 1445

Bachelor of Computer Application (BCA)
3rd Semester (Batch 2022-25)
COMPUTER ARCHITECTURE
Paper—I

Time Allowed—3 Hours]   [Maximum Marks—75

Note :—Attempt **FIVE** questions in all, selecting at least
ONE question from each section. The fifth question
may be attempted from any section. All questions
carry equal marks.

SECTION—A

1. (a) How Shift and Logical micro operations are used ?
        Explain the role of registers.   8

    (b) What is the need of Computer instructions ? Explain.
                                                          7

2. What is the role of timing signals in instruction cycle ?
    Explain the different phases of Instruction cycle.

                                                         15

SECTION—B

3. Explain the following concepts :

    (a) RISC characteristics   7.5

    (b) Direct and Indirect addressing modes.   7.5

4. Discuss the characteristics of the following :

   (a) Hardwired Control unit design   7.5

   (b) General register CPU design.   7.5

SECTION—C

5. Write notes on the following :

   (a) Associative memory   7.5

   (b) Virtual memory.   7.5

6. (a) What is the concept of memory organisation ? Explain.   7.5

   (b) Discuss the working of Cache memory in detail.   7.5

SECTION—D

7. (a) How I/O processor works as an interface ? Explain in detail.   8

   (b) Discuss the working of DMA for data transfer operations.   7

8. (a) Explain the uses of pipeline processing.   7.5

   (b) How SIMD and MIMD architectures are organised ? Explain.   7.5

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DATABASE MANAGEMENT SYSTEM

Paper—II

Time Allowed—3 Hours] [Maximum Marks—75

Note :—Attempt **FIVE** questions in all, selecting at least **ONE** question from each section. The fifth question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. What are the different types of data models supported by database system ? Explain Network Model in detail.

15

2. Explain the following terms giving suitable example :

   (a) Strong Entity

   (b) Weak Entity

   (c) Relationships

   (d) Specialization

   (e) Generalization. 5×3=15

SECTION—B

3. How BCNF performs better than Third normal form ? Explain using example. 15

4. What is Concurrency Control ? What are its potential problems ? Explain the concept of Lock-based Protocols in CC. 15

SECTION—C

5. (a) Explain the concept of DCL. Define DCL statements using suitable examples. 8

   (b) Explain the concept of SQL Intersection using example. 7

6. What do you mean by Database Triggers ? Discuss its different types. Write the syntax for creating a database trigger using different parameters. 15

SECTION—D

7. How Big Data is used to solve the problems of large database ? Explain its use in Data Analytics. 15

8. Differentiate between SQL and NoSQL. Which one is better to use ? Explain using examples. 15

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Bachelor of Computer Application (BCA)

3rd Semester (Batch 2022-25)

INTRODUCTION TO PYTHON PROGRAMMING

Paper—III

Time Allowed—3 Hours]   [Maximum Marks—75

Note :—Attempt **FIVE** questions in all, selecting at least **ONE** question from each section. The fifth question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. (a) Discuss the different ways to run a Python Program. Explain.   8

    (b) Define literals, variables and identifiers used for Python programs.   7

2. (a) How to create a dictionary and explain its different operations ? Elaborate how to iterate over a dictionary.   7

    (b) Explain the usage of logical operator by writing Python program.   8

SECTION—B

3. (a) Write a Python program to find the largest of three numbers using if-else control structure. 7.5

(b) What is meant by recursion ? Write a program to find factorial of a number using recursion. 7.5

4. (a) Differentiate Iteration and Recursion using examples. 7.5

(b) Explain the concept of importing the Python module. 7.5

SECTION—C

5. (a) Write a Python program to read text from a text-file. 7.5

(b) Differentiate write() and writeline() functions. 7.5

6. (a) Write a Python code to find area of a rectangle by using features of object oriented programming. 7.5

(b) What is the significance of inheritance ? Explain. 7.5

SECTION—D

7. Discuss the steps to make SQL database connection using Python with an example. 15

8. Explain the following concepts by taking suitable examples :

(a) Insert and update command 7.5

(b) Data modelling. 7.5