

Exam. Code : 117903
Subject Code : 501086

Bachelor of Computer Application (Hons.) (BCA)

3rd Sem. (Batch 2024-28) (CBGS)

INTRODUCTION TO C PROGRAMMING

Paper : BCA03007T

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 is the use of Algorithm, Flowchart, and Program?
Which symbols are used in a flowchart?
2. Explain the meaning and use of the following in C:
 - (a) Token
 - (b) # define
 - (c) typedef
 - (d) enum.

SECTION—B

3. Write a program in C to get a number from the user and calculate the sum of all its digits which are even.
4. What is a storage class? Explain different storage classes available in C. Give an example of each.

SECTION—C

5. What are the different ways to pass arguments to a function in C? Give an example of each.
6. What is a pointer? What are the various uses of pointers? Give an example of passing an array to a function.

SECTION—D

7. What are user-defined data types in C? How can you create a structure and union in C? Give differences between both.
8. Write and explain various file handling functions available in C.

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Subject Code : 800177

Bachelor of Computer Application (BCA) 3rd Semester
(Batch 2023-26) (CBGS) (Old Sylb.)

DATABASE MANAGEMENT SYSTEM

Paper : BCA03002T

Time Allowed—3 Hours] [Maximum Marks—100

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. Give meaning and examples of strong entity, weak entity, composite, derived attributes, and cardinality. How do you depict these in ER diagram?
2. What is use of Primary Key, Foreign Key and Candidate Key in database? Give examples.

SECTION—B

3. Why is it important to normalize database? Explain 1NF, 2NF and 3NF. Give examples.
4. Compare BCNF and 3NF. Why BCNF is considered stricter? Give examples of tables that are in 3NF but not in BCNF.

SECTION—C

5. Differentiate between table, view, sequence, and index. Give examples of each. Also write SQL to create each of these.
6. (a) Explain various DDL statements.
(b) What is use of trigger? Which are types of triggers?

SECTION—D

7. Define big data. What is big data analytics? What are benefits of big data analytics?
8. Explain the meaning of NoSQL database? Which are different types of NoSQL databases?

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**Bachelor of Computer Application (BCA) 3rd Sem.
(Batch 2023-26) (CBGS)**

COMPUTER ARCHITECTURE

Paper : BCA03001T

Time Allowed—3 Hours]

[Maximum Marks—100

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 is Information represented? Explain the instructions of Register transfer language. 10
(b) Explain the use of arithmetic and Shift micro-operations in detail. 10
2. What is the process of Instruction cycle? Discuss the role of timing signals by taking suitable examples. 20

SECTION—B

3. Explain the following concepts :
 - (a) Micro programmed control unit 10
 - (b) Role of Stack organization of CPU 10

4. Discuss the characteristics of the following :
- (a) Register and relative addressing modes 10
 - (b) RISC Architecture 10

SECTION—C

5. Write notes on the following :
- (a) Concept of Memory Hierarchy 10
 - (b) Use of Associative memory 10
6. (a) What is the concept of Cache memory? Explain. 10
- (b) Why is Virtual memory used for execution? Explain. 10

SECTION—D

7. (a) How is I/O processor used for data transfer? Explain in detail. 10
- (b) Discuss modes of I/O for data transfer operations. 10
8. (a) Discuss the types of pipelining and its benefits. 10
- (b) How are SISD and MIMD architectures organised? Explain. 10

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Subject Code : 501088

Bachelor of Computer Application (Hons.) (BCA)

3rd Semester (Batch 2024-28) (CBGS)

OPERATING SYSTEMS

Paper : BCA03011T

Time Allowed—3 Hours] [Maximum Marks—100

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. Discuss the evolution of Operating System. How does modern OS differ from traditional OS?
2. (a) Differentiate between Program, Process, and Thread. What is the use of PCB?
(b) What are process scheduling criteria?

SECTION—B

3. What is IPS? Discuss any two classical problems of Synchronization.
4. What are contiguous and non-contiguous memory management techniques? How does Segmentation work?

SECTION—C

5. Give the meaning of Page Fault and Page Replacement. Which are various Page Replacement Algorithms?
6. Write the reasons why deadlock occurs. What is the difference between techniques of deadlock avoidance and deadlock prevention?

SECTION—D

7. How does OS help in authentication, authorization, and preventing memory access violations and Denial of service attacks?
8. Compare the OS security features provided by Windows and Linux.

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Subject Code : 800179

Bachelor of Computer Application (BCA) 3rd Semester
(Batch 2023-26) (CBGS) (Old Sylb.)

MULTIMEDIA TECHNOLOGY AND
APPLICATIONS

Time Allowed—3 Hours] [Maximum Marks—100

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) Differentiate between multimedia, hypermedia, and hypertext.
(b) What is multimedia market and marketing multimedia?
2. Write the features and applications of Audacity and Final Cut Pro.

SECTION—B

3. Which are popular image formats? Explain different ways to obtain images for multimedia use.
4. How do natural and computerized colors differ? Discuss any two popular color models.

SECTION—C

5. Differentiate between analog and digital video. Explain any three video file formats.
6. Explain the following concepts:
 - (a) Signal to Noise Ratio
 - (b) PCM
 - (c) MIDI

SECTION—D

7. What is application of animation in web design? Which are animation file formats? Why SVG is considered best?
8. What are stages of building an animation project? What are requirements to make good multimedia project?

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Subject Code : 501089

Bachelor of Computer Application (Hons.) (BCA)

3rd Semester (Batch 2024-28) (CBGS)

CYBER SECURITY FUNDAMENTALS (SEC-2)

Paper—BCA03012T

Time Allowed—3 Hours]

[Maximum Marks—50

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 is Internet? What and how does an IP address play its role?
2. What is meant by cyber security? What are its challenges?

SECTION—B

3. Whom will you call a hacker? What are its types?
4. What is phishing? How is it done?

SECTION—C

5. What is a password? What measures can we take to secure it?
6. What is VPN? How and why is it created?

SECTION—D

7. What are different social networking sites? How will you securely use them?
8. What is IT Act? Discuss any two important aspects of the Act.

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Subject Code : 501090

Bachelor of Computer Application (Hons.) (BCA)

3rd Sem. (Batch 2024-28) (CBGS)

INFORMATION SYSTEMS (MDC-5)

Paper-BCA03014T

Time Allowed—3 Hours]

[Maximum Marks—100

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 global challenges in Information System?
2. Describe about the career in Information Systems.

SECTION—B

3. How does MIS help in an organization?
4. What measures can be taken to secure Information System?

SECTION—C

5. What is DSS? Explain any such system.
6. What is an expert system? How is it related to DSS?

SECTION—D

7. Describe briefly about the importance of knowledge repositories.
8. What is CRM? What should be the important features of such a system?

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Subject Code : 501087

Bachelor of Computer Application (Hons.) (BCA)
3rd Semester (Batch 2024-28) (CBGS)
DATA STRUCTURES & FILE PROCESSING
Paper : BCA03009T

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. Write a step-by-step explanation of how linear search works to find an element in an unsorted list. Also write pseudo code to implement it and analyse its time complexity and space complexity.
2. Explain the concept of a Stack data structure. Discuss its main operations and show how a stack can be implemented using arrays. Illustrate each operation with an example and analyse its time complexity.

SECTION—B

3. What is linked list? How is it represented in the memory? Write an algorithm to insert a new node at a given location in the linked list. Explain this process with the help of an example.

4. Explain how a priority queue works. Describe the insertion and deletion operations with the help of an example. How is a priority queue different from a normal queue and where can it be applied effectively?

SECTION—C

5. What do you mean by Binary Tree? How is it implemented in the memory? Explain different ways to traverse a binary tree using suitable example.
6. What is Graph? How is it represented in the memory? Explain Breadth-First Search method to traverse a node of a Graph using suitable example.

SECTION—D

7. Explain the process of Bubble sort using suitable example. Write an algorithm that performs Bubble sort. Also determine its complexity.
8. Explain in detail the various file organization techniques used in data structures. Discuss the advantages, disadvantages, and applications of each technique such as sequential, direct, and indexed file organization. Illustrate your answer with suitable examples.

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Subject Code : 800178

Bachelor of Computer Application (BCA) 3rd Sem.

(Batch 2023-26) (CBGS) (Old Syllb.)

INTRODUCTION TO PYTHON PROGRAMMING

Paper : BCA03003T

Time Allowed—3 Hours]

[Maximum Marks—100

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 features of Python for Computational problem solving. Write a simple Python program that takes character input from a user. 10
- (b) Explain Data types of Python and illustrate their use. 10
2. (a) How dictionary and lists are used in Python? Discuss the operators used on the list. 10
- (b) Explain the significance of iteration operation over the lists using Python. 10

(Contd.)

SECTION—B

3. (a) Illustrate the use of For control structure through Python program. 10
(b) Write a program in Python to find count of odd numbers from a list of numbers. 10
4. (a) How recursive functions are used for problem solving using Python? Illustrate. 10
(b) Discuss the process of using the packages and the Python modules. 10

SECTION—C

5. (a) What is role of an object and class? Write a program that uses objects and instances. 10
(b) How the files are processed using Python? Discuss the use of write() and writelines() functions. 10
6. (a) How overloading operators are used by Python programs? Illustrate. 10
(b) Discuss the role of exception handling and its types using class attributes. 10

SECTION—D

7. Discuss the following SQL commands with examples :
 - (a) Update 10
 - (b) Insert 10
8. How data modelling is carried out using Python? Explain the process of searching the data from tables using SQL. 20