

201

B.C.A. (Part-II) Examination – 2024

(Faculty of Science)

(Three-Year Scheme of 10+2+3 Pattern)

7569772

Object Oriented Programming Through C++

Time Allowed: Three Hours

Maximum Marks: 100

Answer of all the questions (short answer as well as are to be given in the main answer-book only. Answers of short answer type questions must be given in sequential order. Similarly all the parts of one question of descriptive part should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.

Write your roll number on question paper before start writing answers of questions.

Question paper consists of three parts. All three parts are compulsory.

PART-I : (Very short answer) consists of 10 questions of 2 marks each. Maximum limit for each question is up to 40 words.

PART-II : (Short answer) consists of 5 questions of 4 marks each. Maximum limit for each question is up to 80 words.

PART-III : (Long answer) consists of 5 questions of 12 marks each with one question from each unit with internal choice.

PART-I

1. Very short answer type questions -

[10×2=20]

- ~~(a)~~ What is data type?
- ~~(b)~~ What do you mean by functional programming?
- ~~(c)~~ What is variable?
- ~~(d)~~ What do you mean by unary operator?
- ~~(e)~~ What is destructors?
- (f) What is 'this' pointer?
- (g) What is derived class?
- ~~(h)~~ What is pure virtual function?
- ~~(i)~~ What are the basic operations performs on file?
- ~~(j)~~ What is Templates?

PART-II

2. Short answer type questions -

[5×4=20]

- (a) What is OOP Paradigm? Explain.
- (b) Explain the structure of C++ program with an example.
- (c) How to create classes and objects in C++ with an example.
- (d) What are the different types of polymorphism?
- (e) Explain any three stream state member functions.

PART-III

3. Define object oriented programming and explain feature of object oriented programming.

[3+9=12]

OR

(a) Differentiate between Object Oriented Programming and Functional Programming.

[8]

(b) What are the benefits of OOP?

[4]

4. What are the different data types present in C++? Explain each data types.

[12]

OR

(a) What is the difference between a while loop and a do-while loop?

[6]

(b) What is an Array? Explain different types of Array with example.

[6]

5. Explain friend function with an example. What are the merits and demerits of using the friend function?

[6+6=12]

OR

What is constructor? Explain types of constructor with example.

[3+9=12]

6. What is the importance of Inheritance? How to define derived class explain with suitable example?

[5+7=12]

OR

What is operator overloading? How to define operator overloading? Explain with suitable example.

[4+8=12]

7. What is the difference between opening a file with constructor function and opening a file with open() function? Describe the various file access mode?

[8+4=12]

OR

(i) Write a C++ program to swap two values using concept of function Templates.

[6]

(ii) What is try, catch and throw? Explain with an example.

[6]

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B.C.A. Part-II Examination – 2024

(Faculty of Science)

(Three-Year Scheme of 10+2+3 Pattern)

202-Database Management System

8095972

Time Allowed: Three Hours

Maximum Marks: 100

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PART-I

1. Attempt all questions. Each question carries 2 marks -

[10×2=20]

(a) Define the Database Applications.

(b) Explain the Instance and Schema in DBMS.

(c) Define the terms –

(i) Entity (ii) Entity set

(d) What is Data Model?

(e) List data types allowed in SQL.

(f) What is a view?

(g) Outline the Join.

(h) What is Multi-Valued Dependency?

(i) What is a Nested Query?

(j) What do you mean by Data Recovery?

PART-II

2. Attempt all questions. Each question carries 4 marks. [5×4=20]
- (a) Explain the role and duties of the Database Administrator (DBA) in the DBMS.
 - (b) What is meant by ACID properties in DBMS?
 - (c) Explain Unions, Intersection and Minus in SQL with suitable examples.
 - (d) Differentiate between weak and strong entity sets.
 - (e) Discuss the data dependencies and their types briefly.

PART-III

3. What is a Database and Database Management System (DBMS)? Explain the advantages and disadvantages of DBMS [12]

OR

Explain Codd's Relational Database Rules. [12]

4. What is an E-R diagram? Explain different notations used in drawing the ER diagram. [12]

OR

What is Relational Calculus? What is the difference between Tuple Relational Calculus and Domain Relational Calculus? [12]

5. Differentiate the following - [2×6=12]

- (a) Normalization Vs. Denormalization
- (b) 2-Tier Architecture As. 3-Tier Architecture

OR

Write a short note on the following - [3×4=12]

- (a) Data Abstraction
- (b) Failure Classification
- (c) Aggregation Functions

6. What is Functional dependency and explain the different types of Functional dependency in DBMS with examples? [12]

OR

Draw a transaction state diagram and describe each state that a transaction goes through during its execution. [12]

7. What is Concurrency Control? Explain the timestamp-based Concurrency Control techniques in detail. [12]

OR

Write short notes on - [3×4=12]

- (a) SQL Indexes
- (b) Characteristics of Relational Database Management System (RDBMS).
- (c) Explain Data Definition Language (DDL) and Data Manipulation Language (DML).

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B.C.A. (Part-II) Examination – 2024

(Faculty of Science)

(Three-Year Scheme of 10+2+3 Pattern)

Paper-203

Software Engineering

7740968

Time Allowed: Three Hours

Maximum Marks: 100

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PART-I

[10×2=20]

1. (a) Define system.
- (b) What is Project Scheduling?
- (c) What is SQA?
- (d) What are the characteristics of a good system?
- (e) What do you mean by Risk Assessment?
- (f) What are the elements of a system?
- (g) What is Data dictionary?
- (h) Write the name of the Decomposition Techniques.
- (i) Define the Quality Concepts.
- (j) What is System Design?

PART-II

[5×4=20]

2. (a) Explain Validation Testing and System Testing with suitable diagram.
- (b) Define Software Metrics.
- (c) Write difference between Data Flow Diagram and Use cases.
- (d) Explain the System Design Process.
- (e) Write short notes on System Maintenance.

PART-III

Unit-I

3. What is System Development Life Cycle (SDLC)? Explain its Phases. [12]

OR

Explain following model -

[6×2=12]

- (a) Spiral Model
- (b) Agile Model

Unit-II

4. Explain COCOMO Model in detail. [12]

OR

Write short note on -

[4×3=12]

- (a) Verification
- (b) Validation
- (c) Line of Code

Unit-III

5. Why requirement analysis is important in development of a software? Describe Principles of Analysis. [12]

OR

Write short note on -

[6×2=12]

- (a) Design Model
- (b) Design Elements

Unit-IV

6. Write difference between - [6×2=12]

- (a) Unit Testing and Integration Testing
- (b) Black Box Testing and White Box Testing

OR

What is Software testing? Explain Strategies and issues of software testing. [12]

Unit-V

7. Explain Software Reliability and Safety. [12]

OR

Explain the following -

[6×2=12]

- (a) Reverse Engineering
- (b) Forward Engineering

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B.C.A. (Part-II) Examination – 2024
(Faculty of Science)
(Three-Year Scheme of 10+2+3 Pattern)
Paper-204
Data Structures and Algorithms

7923269

Time Allowed: Three Hours

Maximum Marks: 100

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PART-I

Q.1 Attempt all questions -

[10×2=20]

- (a) Define an algorithm and write its characteristics.
- (b) Define a stack.
- (c) What is polish notation?
- (d) What is head node?
- (e) What is Binary search tree?
- (f) Name tree traversals methods.
- (g) Which data structure is used in BFS and DFS?
- (h) Define a Graph.
- (i) Name two searching algorithm.
- (j) What is the worst case time complexity of merge and quick sort?

PART-II

Q.2 Attempt all questions -

[5×4=20]

- (a) Write an algorithm to delete an element from an array.
- (b) Explain circular and doubly linked list with a neat diagram.
- (c) Explain tree traversal methods using suitable example.
- (d) Explain transitive closure.
- (e) Write an algorithm to sort an array using selection sort method.

PART-III

Q.3 Define and explain the stack data structure with suitable example. Give algorithms for Push, Pop, Stackempty and Stackfull functions.

[12]

OR

Define and explain the queue data structure with suitable example. Give algorithms for insert, delete, Queueempty and Queuefull functions.

[12]

Q.4 Write an algorithm to insert a node in single linked list.

[12]

OR

What is a linked list? Give the data structure and write algorithms to -

[12]

- (i) Delete a node.
- (ii) Count the number of nodes.

Q.5 Write an algorithm to insert a node in a binary search tree.

[12]

OR

Write an algorithm to find a node in a binary search tree.

[12]

Q.6 Write an algorithm to traverse a graph using DFS traversal method.

[12]

OR

Write an algorithm for all pairs of shortest path.

[12]

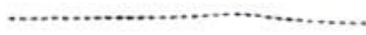
Q.7 What is the meaning of collision in hashing? Explain collision resolution techniques in context of hashing.

[12]

OR

Write an algorithm to sort an array using quick sort method.

[12]



This question paper contains 2 printed pages.

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B.C.A. (Part-II) Examination – 2024
(Faculty of Science)
(Three-Year Scheme of 10+2+3 Pattern)
205-Cloud Computing

8243167

Time Allowed: Three Hours

Maximum Marks: 100

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PART-I

1. Very short questions :

[10×2=20]

- | | |
|---|-----|
| (a) Write the examples of ERP and CRM. | [2] |
| (b) Difference between End Users and Users. | [2] |
| (c) What is CSCC? | [2] |
| (d) Define BIST. | [2] |
| (e) What does Microsoft Hyper - V mean? | [2] |
| (f) Figure out the taxonomy of virtualization. | [2] |
| (g) Name the 6 types of cloud security tools. | [2] |
| (h) What are the issues in cloud computing? | [2] |
| (i) Define features of App Engine. | [2] |
| (j) Name of the 3 services provided by Microsoft Azure. | [2] |

PART-II

2. Short questions: [5×4=20]
- (a) What features do you need from a CRM platform? [4]
 - (b) State the issues for the designer and the user of check point software. [4]
 - (c) Define about the Hyper - V types. [4]
 - (d) Describe about the cloud security threats and vulnerabilities. [4]
 - (e) What is the role of Azure SQL Database and the availability of it? [4]

PART-III

Long questions :

3. Explain migration in cloud computing. Also define challenges and benefits of cloud migration. [5×12=60]
[12]

OR

What is the key components of cloud services for multiplayer games? Write about the best clouds for multiplayer games. [12]

4. Write short notes on the following - [2×6=12]
- (a) Hadoop Distributed File System
 - (b) Community Cloud Model

OR

Define about cloud interoperability and explain the multiple layers of it. [12]

5. What do you mean by KVM and Xen and the purpose of KVM and Xen? [12]

OR

State the role of Virtual Box and VMware and mention the differences between Virtual Box and VMware. [12]

6. Explain the levels of Multi-Tenancy and about the risks and issues of Multi-Tenant Security. [12]

OR

Write about the Service Level Agreements, its importance and types. [12]

7. Describe CASP (Critical Assessment of Protein Structure Prediction). [12]

OR

Write the points in detail while processing the Satellite Image. [12]

This question paper contains 2 printed pages.

Roll No.

1727
B.C.A. (Part-II) Examination – 2024
(Faculty of Science)
(Three-Year Scheme of 10+2+3 Pattern)
.NET Programming With C#
Paper : BCA-A01

8318380

Time Allowed: Three Hours

Maximum Marks: 100

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PART-I

I Very short answer -

[10×2=20]

- (a) What is meta data?
- (b) What is JIT Compiler?
- (c) What is jagged array?
- (d) Why do we use console? Write line ().
- (e) What is ADO.NET?
- (f) Define data adapter.
- (g) Define IIS.
- (h) What is the use of log file for IIS?

- (i) What do you mean by web control?
(j) Define web forms.

PART-II

2. (a) Explain about primitive data types in ASP.NET. [5×4=20]
(b) Explain events in detail.
(c) Differentiate between ADO.NET dataset and data reader.
(d) Explain in detail about virtual directory.
(e) Write a short note on WSDL.

PART-III

3. What do you mean by operator? Explain the different kinds of operator which are used in ASP.NET. [12]

OR

What is .NET framework? Explain main features and architecture of .NET framework. [4+4+4=12]

4. What is list box control? Explain various properties, methods and events of list box control. [12]

OR

Write short notes on the following - [12]

- (i) Label
(ii) Radio Button
(iii) Text Box
(iv) Dialog Box

5. Explain in detail about the architecture of ADO.NET. [12]

OR

How can you connect to a database using ADO.NET? Explain with help of suitable example. [12]

6. What are the different types of state management techniques available in ASP.NET? Discuss each technique briefly. [12]

OR

Explain about - [6+6=12]

- (i) Set a default document for IIS.
(ii) Change home directory of a web site using IIS.

7. What is the use of server controls in ASP.NET? Explain various types of server control in ASP.NET. [4+8=12]

OR

Write short notes on - [6+6=12]

- (i) Web Services Protocol
(ii) Input Validation Controls