R7728	Sub. Code
	551101

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2022

First Semester

Computer Science

DESIGN AND ANALYSIS OF ALGORITHMS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** the questions.

1. An _____ is defined as a set of well-defined instructions used to accomplish a particular task.

   (a) Program (b) Function

   (c) Algorithm (d) Procedure

2. The measure of the longest amount of time possibly taken to complete an algorithm is expressed as _____.

   (a) Little-O (b) Little-Omega

   (c) Big-Omega (d) Big-O

3. The recursive versions of binary search use a _____ structure.

   (a) Branch and bound

   (b) Dynamic programming

   (c) Divide and conquer

   (d) Simple recursive

4. What is the worst case time complexity of merge sort?

(a) O(n*n) (b) O(Log N)

(c) O(N Log N) (d) O(Log Log N)

5. What is the objective of the knapsack problem?

(a) To Get Maximum Weight In The Knapsack

(b) To Get Minimum Total Value In The Knapsack

(c) To Get Maximum Total Value In The Knapsack

(d) To Get Minimum Weight In The Knapsack

6. Which algorithm finds the solution for the single-source shortest path problem for a tree?

(a) Prim's (b) Dijkstra's

(c) Kruskal's (d) Huffman code

7. Which of the following is/ are property/properties of a dynamic programming problem?

(a) Require More Time

(b) Greedy Approach

(c) Evolutionary Approach

(d) Optimal Substructure and Overlapping Sub-problems

8. In a graph of n nodes and n edges, how many cycles will be present?

(a) Exactly 1 (b) At most 1

(c) At most 1 (d) Depending on the graph

9. Which data structure is used for implementing a FIFO branch and bound strategy?

(a) Queue (b) Array

(c) Stack (d) Linked List

10. _____ is an optimization technique for particular classes of backtracking algorithms that repeatedly solve sub-problems.

(a) Decrease and conquer

(b) Dynamic programming

(c) Branch and bound

(d) Divide and Conquer

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Elucidate about specification of algorithm.

Or

(b) Differentiate Time Complexity and Space complexity.

12. (a) Sort the given set of elements 792, 341, 252, 951,508, 757, 464, 818, 565, 376 using Quick Sort algorithm and explain.

Or

(b) Explain about Binary Search and its merits and demerits.

13. (a) Describe about Knapsack algorithm.

Or

(b) Enumerate about optimal storage on tapes.

14. (a) Explain about reliability design.

Or

(b) Write a note string editing.

15. (a) Discuss about sum of subsets.

Or

(b) Illustrate the algorithm using Backtracking technique to solve Hamiltonian problem.

Part C $(5 \times 8 = 40)$

Answer any **five** questions.

16. Enumerate the stack operations.

17. Elaborate on Asymptotic Notations with examples.

18. Write down and explain the algorithm to solve all pair shortest paths problem.

19. Explain about Defective chess board.

20. Discuss about minimum cost spanning tree.

21. Elaborate how dynamic programming is applied to solve travelling salesperson problem.

22. Illustrate about Graph Coloring-Algorithm with example.

23. Elucidate how the branch-and-bound technique is used to solve 0/1 Knapsack problem with example.

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R7729	Sub. Code 551102

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2022

First Semester

Computer Science

ADVANCED DATABASE MANAGEMENT SYSTEMS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** questions.

1. An _____ is a real-world thing which can be distinctly identified like a person, place or a concept.

   (a) Object (b) Entity

   (c) Table (d) Relation

2. ER stands for

   (a) Enterprise Resources

   (b) Entity Relationship

   (c) Enterprise Relation

   (d) Entity Resource

3. A table is called a _____ in RDBMS.

   (a) Data File

   (b) Set of Rows and Columns

   (c) Relation

   (d) Dataset

4. A _____ in a database is a request for information from a database management system (DBMS).

(a) Query (b) View

(c) Table (d) Cursor

5. _____ enables us to share attributes between objects such that a subclass inherits attributes from its parent class.

(a) Object Orientation

(b) DBMS

(c) Inheritance

(d) Entity

6. _____ data is associated with geographic locations such as cities, towns etc.

(a) Spatial (b) Object Oriented

(c) Relational (d) Temporal

7. _____ is the branch of symbolic logic that uses symbols for unanalyzed propositions and logical connectives only.

(a) Predicate Calculus

(b) Deductive Calculus

(c) Prepositional Calculus

(d) Recursive Query processing

8. XML stands for _____.

(a) Extensible Markup Language

(b) Extensive Mail Language

(c) Extended Markup Language

(d) Extensive Data management Language

9. DTD stands for

(a) Data To Data (b) Document Type Definition

(c) Data to Database (d) None of the above

10. _____ are a set of rules used to maintain the quality of information.

(a) Protocols

(b) Queries

(c) Integrity Constraints

(d) Relations

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the different types of Relationships with appropriate examples.

Or

(b) What is Functional Dependency? Explain.

12. (a) Explain the various steps involved in Query Processing.

Or

(b) Elucidate: Complex Data Types. Give appropriate Examples.

13. (a) Explain the different types of queries that can be done with spatial data.

Or

(b) List out the characteristics of a spatial database.

14. (a) Explain the XML Hierarchical Data Model.

Or

(b) What is XML Querying? Give examples.

15. (a) List out the challenges involved in handling Multimedia Databases.

Or

(b) Give few examples for Multimedia databases and list out the benefits associated with Multimedia Databases.

Part C $(5 \times 8 = 40)$

Answer any **five** questions.

16. Explain the various Normal Forms used in designing a database with appropriate examples.

17. Explain the concept of Shared Memory System in Parallel Database.

18. Explain the various types of Database Parallelism.

19. Explain the concept of Concurrency Control in detail.

20. Explain the difference between Object Oriented and Object Relational Databases.

21. Elucidate: Deductive Database Systems.

22. Explain the process involved in designing a Database in detail.

23. Explain the following:

(a) Multimedia Sources.

(b) Multimedia Database Applications.

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R7730	Sub. Code 551103

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2022

First Semester

Computer Science

DISTRIBUTED OPERATING SYSTEM

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** questions.

1. A Distributed system has _____ nodes.

   (a) Zero node (b) Two nodes

   (c) One node (d) Multiple nodes

2. In Distributed System, each processor has its own _____.

   (a) Local Memory

   (b) Both Local Memory and Clock

   (c) Clock

   (d) None of the above

3. Network Operating System runs on

   (a) Server

   (b) Both Server and every System in the Network

   (c) Every System in the Network

   (d) None of the mentioned

4. Concurrent access to shared data may result in _____.

(a) Data Consistency (b) Data Inconsistency

(c) Data Insecurity (d) None of the above

5. If one site fails in Distributed system, _____.

(a) The remaining sites can continue operating

(b) Directly connected sites will stop working

(c) All the sites will stop working

(d) None of the mentioned

6. Distributed Systems have _____.

(a) High Security

(b) Better System Utilisation

(c) Better Resource Sharing

(d) Low System Overhead

7. _____ is not possible in Distributed File System.

(a) File Replication (b) Client interface

(c) Migration (d) Remote Access

8. In a distributed computing environment, distributed shared memory is used which is _____.

(a) Logical combination of virtual memories on the nodes

(b) Logical combination of physical memories on the nodes

(c) Logical combination of the secondary memories on all the nodes

(d) All of the above

9. A sequential flow of tasks within a process is called a _____.

(a) Program (b) Thread

(c) Procedure (d) Function

10. Android is _____.

(a) an Operating System

(b) a Mobile Device

(c) an Application

(d) a Mobile Application

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) List out the functions of an Operating System.

Or

(b) What is a Deadlock? List out the conditions that lead to Deadlock in a system.

12. (a) Explain the issues associated with Distributed Operating System.

Or

(b) Explain the method used for detecting Deadlock in a Distributed System.

13. (a) With a neat sketch, explain the architecture of Distributed Shared Memory.

Or

(b) Explain: Distributed Mutual Exclusion.

14. (a) Explain: Concurrent Check pointing and Recovery in Distributed Systems.

Or

(b) Explain about a Non-blocking and Two-Phase Commit Protocol.

15. (a) Elucidate: Multiprocessor Scheduling in Operating System.

Or

(b) List out the features of LINUX operating system.

Part C $(5 \times 8 = 40)$

Answer any **five** questions.

16. Write about the Consumable and Reusable resources in Deadlock.

17. Explain the differences between the Token-Based and Non-Token-based algorithms in Distributed system.

18. Explain the process involved in Distributed Scheduling.

19. Explain the Design issues involved in Distributed Resource Management.

20. Explain the Architecture of Distributed File Systems.

21. Explain the different types of Failures in Distributed System.

22. Explain the concept of Memory Management in detail.

23. Write in detail about the Database Operating Systems.

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R7731	Sub. Code
	551104

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2022

First Semester

Computer Science

ADVANCED JAVA PROGRAMMING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** questions.

1. Which of the below is not a valid design pattern?

   (a) Singleton (b) Factory

   (c) Command (d) Java

2. Which of these standard collection classes implements a dynamic array?

   (a) Abstract List (b) Linked List

   (c) Array List (d) Abstract Class

3. Which method is invoked immediately after the start( ) method and any time the applet needs to repaint itself in the browser?

   (a) stop( ) (b) init( )

   (c) paint( ) (d) destroy( )

4. AWT stands for

   (a) Applet Windowing Toolkit

   (b) Abstract Windowing Toolkit

   (c) Absolute Windowing Toolkit

   (d) None of the above

5. What are the major components of JDBC?

   (a) Driver Manager, Driver, Connection, Statement, and ResultSet

   (b) Driver Manager, Driver, Connection, and ResultSet

   (c) Driver Manager, Statement, and ResultSet

   (d) Driver Manager, Connection, Statement, and ResultSet

6. Which is a component in AWT that can contain other components like button, text fields, labels, etc?

   (a) Window (b) Container

   (c) Panel (d) Frame

7. Which class is used to create servers that listen for either local client or remote client programs?

   (a) ServerSockets (b) httpServer

   (c) httpResponse (d) None of the above

8. Which of the following code is used to get an attribute in a HTTP session object in servlets?

   (a) session.getAttribute(String name)

   (b) session.alterAttribute(String name)

   (c) session.updateAttribute(String name)

   (d) session.setAttribute(String name)

9. Which of the page directive should be used in JSP to generate a PDF page?

(a) contentType (b) generatePDF

(c) typePDF (d) contentPDF

10. How many methods are there in functional interface in JAVA 8?

(a) 0 (b) 1

(c) 2 (d) 3

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) How does Linked list work in JAVA?

Or

(b) Explain in brief about the Tree Map Class in JAVA.

12. (a) Write in detail about the Applet Lifecycle.

Or

(b) Elucidate: AWT Component classes.

13. (a) Explain the JDBC architecture in detail.

Or

(b) Explain the procedure involved in creating a new database and table with JDBC.

14. (a) Explain the procedure involved in passing parameters to and retrieving parameters from Servlet.

Or

(b) Write a note on JSP Engines.

15. (a) Elucidate: Functional Interface.

Or

(b) Explain about Private Interface Methods.

Part C $(5 \times 8 = 40)$

Answer any **five** questions.

16. Explain the concept of Queue class.

17. Compare and contrast: Comparable and Comparator Interface.

18. Explain the steps involved in developing an Applet program with a perfect sample Applet Program,

19. Elucidate: Swing Component classes.

20. Explain the various classes and interfaces associated with JDBC.

21. Explain: Socket program using TCP/IP.

22. Write in detail about the Database connectivity using Servlets and JSP.

23. Explain about Multiresolution Image API.

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R7732	Sub. Code
	551502

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2022

First Semester

Computer Science

Elective -I:MOBILE APPLICATION DEVELOPMENT

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all the** questions.

1. On which of the following, developers can test the application, during developing the android applications?

   (a) Third-party emulators

   (b) Emulator included in Android SDK

   (c) Physical android phone

   (d) all of the above

2. Android is _____

   (a) An operating system

   (b) a web browser

   (c) A web server

   (d) None of the above

3. The Android project folder "res/" contain_____?

(a) Resource files

(b) Java Activity classes

(c) Java source code

(d) Libraries

4. What does API stand for?

(a) Application Programming Interface

(b) Android Programming Interface

(c) Android Page Interface

(d) Application Page Interface

5. Which company developed android?

(a) Apple (b) Google

(c) Android Inc (d) Nokia

6. Which of the following kernel is used in Android?

(a) MAC (b) Windows

(c) Linux (d) Redhat

7. Another name for Appcelerator Titanium is ————————

(a) Titanium SDK

(b) Titanium APK

(c) Titanium ATK

(d) Titanium USK

8. The scripts which are not compatible with Phonegap?

(a) Code base CSS (b) HTML

(c) Ruby (d) Java

9. Mono is a software platform designed to allow developers to easily create cross platform applications as part of the _____

(a) Windows Platform

(b) .NET Foundation.

(c) Blackberry OS

(d) iOS

10. Android supports _____ features.

(a) Multitasking

(b) Bluetooth

(c) Video calling

(d) All of the above

Part B $(5 \times 5 = 25)$

Answer **all** the questions, choosing either (a) or (b).

11. (a) Elucidate the cost of mobile application development.

Or

(b) Illustrate about how your app as a mobile app.

12. (a) Analyze and justify Android as competition to itself.

Or

(b) Explain how to connect Android to Google play.

13. (a) Enumerate the tools needed for iOS development.

Or

(b) Describe about Hellow world app.

14. (a) Write a note on the role of Titanium.

Or

(b) Discuss about how to connect Titanium to the market.

15. (a) Elaborate Derby app with MONO.

Or

(b) Explain about MONO framework.

Part C $(5 \times 8 = 40)$

Answer any **five** questions.

16. Elaborate Mobile Application Frameworks.

17. Describe about the significance mobile strategies in the business world.

18. Write note on android development practices.

19. Elucidate about debugging iOS Apps.

20. Write about UI elements to be used to develop an iOS applications.

21. Enumerate how to build the Derby App Titanium.

22. Discuss about the tools needed to develop in PhoneGap.

23. Explain about how to build the Derby App in Mono.

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