

D-1465

Sub. Code

31311

DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION,
DECEMBER 2025.

First Semester

COMPUTER ORGANIZATION AND ARCHITECTURE

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is the purpose of a decoder in digital circuits?
2. Define the term “floating-point representation” in computer arithmetic.
3. Define Direct Memory Access (DMA).
4. Differentiate between combinational and sequential circuits.
5. What are the functions of the Control Unit (CU) in a computer system?
6. Write the role of the Arithmetic Logic Unit (ALU) in processing data.
7. What is the significance of cache memory in a computer system?

8. Define the term “instruction format” in computer organization.
9. List the types of addressing modes in computer instructions.
10. What is the function of a multiplexer in digital circuits?

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Explain the working of a multiplexer with a suitable example.

Or

- (b) Discuss the importance of Boolean algebra in simplifying digital circuits.

12. (a) Describe the different types of memory organization techniques used in computer systems.

Or

- (b) Explain the concept of virtual memory and its advantages.

13. (a) Discuss the hierarchical memory system in a computer.

Or

- (b) What are the advantages of using associative memory? Explain.

14. (a) Explain the different types of microoperations in a computer system.

Or

- (b) Describe the process of synchronous data transfer.

15. (a) Discuss the role of the Input-Output Processor (IOP) in a computer system.

Or

- (b) Explain the concept of interrupt handling and its importance.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss the structure and functions of the Central Processing Unit (CPU) in detail.
17. Explain the various types of computer instructions and their execution process.
18. Describe the different types of addressing modes in computer instructions.
19. Discuss the algorithms used for binary addition, subtraction, multiplication, and division
20. Explain the concept of memory hierarchy and its importance in computer systems.
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31312

DISTANCE EDUCATION

**M.Sc. (Information Technology) DEGREE EXAMINATION,
DECEMBER 2025.**

First Semester

OBJECT ORIENTED PROGRAMMING AND JAVA

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is known as bytecode?
2. List the two special operators in java.
3. What is constructor?
4. What is class?
5. When is a thread said to be in a dead state?
6. Define thread.
7. What is an applet?
8. List the methods in graphics class.
9. What are the two types of streams?
10. What are the functions of FileReader class?

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Explain about a structure of a java program.

Or

- (b) Write a short note on conditional statement in java.

12. (a) Explain any two types of inheritance.

Or

- (b) How to define an interface in java? Explain.

13. (a) List and explain about the methods of thread.

Or

- (b) Write a short note on deadlock in multi-threading.

14. (a) What is error? Explain the different types of errors.

Or

- (b) Describe about the HTML document and its elements.

15. (a) Write a short note on handling the primitive data types and I/O exceptions.

Or

- (b) What is delimiter in StringTokenizer class? Explain its types.

PART C — (3 × 10 = 30 marks)

Answer any **THREE** questions.

16. Explain the different data types in java with suitable examples.
 17. Define array. Explain about multi-dimensional array in java.
 18. Write a detailed note on life cycle of thread.
 19. Write a brief note on exception handling mechanism.
 20. Explicate the concept of byte stream classes in java.
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DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2025.

First Semester

Information Technology

DATA STRUCTURES AND ALGORITHMS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. List any four operations on data structures.
2. Define base address.
3. Write the characteristic feature of prefix and postfix notation.
4. What is the main advantage of a circular linked list over linear linked list?
5. What are the variations of binary trees?
6. What is hash function?
7. Define binary search.

8. What is the time complexity of linear search in the worst-case scenario?
9. List out the two types of sorting.
10. Define tree sort.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Explicate the linear data structures.

Or

- (b) Describe the memory representation of a two-dimensional array.

12. (a) How are linked lists represented? Explain it.

Or

- (b) Write a brief note on insertion and deletion in doubly-linked lists.

13. (a) List and explain any four the basic terms of binary tree.

Or

- (b) Explain about binary search tree.

14. (a) Develop an algorithm for interpolation search.

Or

- (b) Write a comparison of different search algorithms.

15. (a) What is meant by sorting? Explain its types.

Or

- (b) Describe the steps to sort the values stored in the array in ascending order using quick sort.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write in brief about Multi-dimensional arrays.
 17. Discuss the applications of queue in detail.
 18. What is traversing a binary tree? Write the algorithms for Pre-order, In-order and Post order traversal binary tree.
 19. Write a detailed note on Linear and Binary Search algorithm.
 20. Explicate bubble sort algorithm with an example.
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DISTANCE EDUCATION

**M.Sc. (Information Technology) DEGREE EXAMINATION,
DECEMBER 2025.**

Second Semester

DATA MINING AND WAREHOUSING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Mention any two OLAP operations.
2. Define similarity and dissimilarity in data preprocessing.
3. Delineate support and confidence.
4. What is entropy in decision tree classification?
5. Mention any two differences between supervised and unsupervised learning.
6. Give the role of a genetic algorithm in machine learning.
7. How is knowledge mining different from data mining?
8. Recite the function of the 'Process Panel' in RapidMiner.
9. Define Big Data.
10. Describe Hadoop Distributed File System (HDFS).

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Write a short note on the steps involved in data cleaning.

Or

- (b) Discuss the various measures of similarity and dissimilarity.

12. (a) Clarify the Apriori Algorithm with an example. Why is it used in data mining?

Or

- (b) Explain the working of dynamic itemset counting algorithm.

13. (a) Discriminate between K-Means and K-Medoid clustering algorithms.

Or

- (b) Describe the role of genetic algorithms in optimization problems.

14. (a) Express the characteristics and challenges of web structure mining.

Or

- (b) Explain how WEKA is used for implementing classification algorithms.

15. (a) Elucidate the major characteristics of Big Data.

Or

- (b) Illustrate the core components of Hadoop.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Depict the different forms of knowledge discovered through data mining.
 17. Clarify Bayesian classification in detail. Highlight its applications and assumptions.
 18. Describe in detail the different clustering paradigms with examples.
 19. Discover the role of WEKA, RapidMiner, and MATLAB in visual data mining. Highlight their unique features, data flow, and interface.
 20. Conclude the advantages of using Hadoop for Big Data analytics.
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31322

DISTANCE EDUCATION

**M.Sc. (Information Technology) DEGREE EXAMINATION,
DECEMBER 2025.**

Second Semester

**RELATIONAL DATABASE MANAGEMENT
SYSTEM (RDBMS)**

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. State the attributes of information.
2. What is an entity list?
3. Expand the following:
 - (a) PL/SQL
 - (b) DCL
 - (c) DDL
 - (d) DML.
4. Name any two types of constraints used in SQL.
5. What is a JOIN in SQL?
6. Brief tuples.
7. What is validation in SQL?

8. Give the methods for insert NULL values in a column.
9. What is mean by cluster indexes?
10. How many clustered indexes can a table have?

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Describe the organization of a database.

Or

- (b) Draw the E-R diagram of a library using the three different E-R models?

12. (a) Write short notes on retrieving data from a table.

Or

- (b) Describe about relational algebra operations.

13. (a) List out the logical operators in sql queries.

Or

- (b) Write about join operators with example.

14. (a) What are the key properties of SQL transactions?

Or

- (b) Illustrate the Buffer Management Systems.

15. (a) Explain categorize of storage devices.

Or

- (b) Narrate about B+tree.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Elucidate the elements of a database with the help of a neat diagram.
 17. Discuss in detail about the tuple relational calculus.
 18. What is normalization? Explain the types of normal forms.
 19. Explain transaction state with example.
 - (a) Lock based protocols
 - (b) Timestamp based protocols
 20. What are the File organization and indexing?
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DISTANCE EDUCATION

**M.Sc. (Information Technology) DEGREE EXAMINATION,
DECEMBER 2025.**

Second Semester

VISUAL PROGRAMMING WITH .NET

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Narrate the use of the Toolbar in Visual Studio.
2. What information does the Status Bar display?
3. List two types of method parameter passing techniques in C#.
4. Mention the use of private and public access modifiers.
5. What are generics?
6. Defend the property settings in solution explorer.
7. How does “Stepping Through Code” help during debugging?
8. Write the purpose of a foreign key in database tables.
9. Define WPF.
10. Write the use of ASP.NET MVC,

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Explain the components of the visual studio menu system.

Or

- (b) State any two types of Visual Studio projects with examples.

12. (a) Write and explain the code skeleton in C# and VB.

Or

- (b) What is the use book marks and How to Use Bookmarks in Visual Studio.

13. (a) Discuss how you will create an interface with an example.

Or

- (b) How you will manage compilation settings in project?

14. (a) Describe the use of the Quick Watch window and “Pin to Source” feature.

Or

- (b) Explain how stored procedures are created and used in SQL Server.

15. (a) Describe the role of Canvas and WrapPanel in WPF.

Or

- (b) Discuss the basic components of a WCF service and how it is deployed.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss the procedure for creating and managing a Windows Forms Application project in Visual Studio.
 17. Explain different parameter passing techniques in C# (by value, by reference, and out parameters) with code examples.
 18. How will you organise the projects using solution explorer?
 19. Write a detailed note on debugging a C# application using breakpoints, stepping through code, and observing variable values using Locals and Watch windows.
 20. Describe how to design a simple Silverlight application and integrate it with a web page.
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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION,
DECEMBER 2025.

Third Semester

OPEN SOURCE SOFTWARE

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. What are the key characteristics of open-source software?
2. Mention any two advantages of using Linux as an operating system.
3. What is the significance of primary keys in MySQL?
4. How does MySQL handle date and time data types?
5. What are constants in PHP? Give an example.
6. What is the difference between include () and require () in PHP?
7. What are dictionaries in Python?
8. How does Python handle conditional statements?
9. What is the purpose of *chomp* () in Perl?
10. How does Perl handle file operations?

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Explain the need for open-source software and its real-world applications.

Or

- (b) Describe process management and scheduling in Linux.

12. (a) Write a MySQL query to select, update, and delete records from a table.

Or

- (b) Explain the concept of foreign keys and their role in relational databases.

13. (a) Develop a simple PHP script to send emails using the mail () function.

Or

- (b) Explain how PHP handles session management with an example.

14. (a) Write a Python program to demonstrate the use of loops and conditional statements.

Or

- (b) Compare different error handling techniques in Python.

15. (a) Write a Perl script to read data from a file and display its contents.

Or

- (b) Explain how subroutines are used in Perl with an example.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss the role of the Linux kernel in process management, including signals and scheduling techniques.
 17. Explain the different types of MySQL joins with suitable examples.
 18. Develop a PHP-based login system with database connectivity.
 19. Create a Python program that performs CRUD operations on a file while handling exceptions.
 20. Illustrate the importance of Perl in text processing and data manipulation with examples.
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DISTANCE EDUCATION

**M.Sc. (Information Technology) DEGREE EXAMINATION,
DECEMBER 2025.**

Third Semester

Operating Systems

(CBCS 2018-19 Academic Year onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. What are the main functions of an operating system?
2. What is multiprogramming?
3. Define process control block (PCB).
4. What is a long-term scheduler?
5. What is the purpose of inter-process communication?
6. Define deadlock.
7. What is contiguous memory allocation?
8. Differentiate between a page table and an inverted page table.
9. What is a directory structure in file systems?
10. List different types of disk scheduling algorithms.

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Describe the layered structure of an operating system.

Or

- (b) Explain the different types of system calls.

12. (a) Explicate various process states with a neat diagram.

Or

- (b) Illustrate the different scheduling criteria used in process scheduling.

13. (a) Elaborate the concept of semaphores and how they help in synchronization.

Or

- (b) List and explain the four conditions to occur deadlock.

14. (a) Describe the concept of virtual memory and demand paging.

Or

- (b) Explain page replacement algorithms with examples.

15. (a) Describe file protection mechanisms in an operating system.

Or

- (b) Explain how free space is managed in file systems.

PART C — (3 × 10 = 30 marks)

Answer any **THREE** questions.

16. Explain in detail the architecture and design of an operating system.
 17. Describe different CPU scheduling algorithms with examples.
 18. Discuss in detail various synchronization mechanisms.
 19. Explain different memory management strategies with suitable examples.
 20. Discuss disk scheduling techniques in detail.
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DISTANCE EDUCATION

**M.Sc. (Information Technology) DEGREE EXAMINATION,
DECEMBER 2025.**

Third Semester

COMPUTER NETWORKS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Write the two ways to connect the devices.
2. Define Digital Signal.
3. Define framing
4. What is CRC?
5. State the role of Routing Protocol.
6. What is called congestion?
7. What is Transport Entity?
8. Define Uniform Resource Locator.
9. List the cryptographic principles.
10. What is Encryption function?

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Discuss about various components of computer networks.

Or

- (b) Write a short note on Analog and digital signals performance in computer networks.

12. (a) What are the functions of Data Link Layer? Explain.

Or

- (b) List and explain the Controlled access in carrier sense multiple access with collision avoidance.

13. (a) What are Routing and Flooding Algorithm? Compare.

Or

- (b) Difference between Flow Control and Congestion Control Algorithm.

14. (a) Write a short note on Mail Exchange.

Or

- (b) Explain about Hyper Text Transfer Protocol.

15. (a) Differentiate Substitution and Transposition ciphers.

Or

- (b) Write an algorithm for generation of RSA Key Pair.

PART C — ($3 \times 10 = 30$ marks)

Answer any **THREE** questions.

16. Illustrate about OSI Reference Model.
 17. Write about the Sliding Window Protocol in detail.
 18. What is packet and message switching? Explain its advantages and disadvantages.
 19. Describe about Transmission Control Protocol in detail.
 20. Write a detail note on Symmetric key cryptography.
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DISTANCE EDUCATION

**M.Sc. (Information Technology) DEGREE EXAMINATION,
DECEMBER 2025.**

Fourth Semester

WEB TECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are HTML forms used for?
2. Define Dynamic HTML (DHTML).
3. What is Document Object Model (DOM) in XML?
4. Differentiate between XML and HTML.
5. What is introspection in Java Beans?
6. What are the different types of Servlets?
7. Define HTTP request and response handling in Servlets.
8. What are scripting elements in JSP?
9. List the steps involved in database connectivity using JDBC.
10. What is the purpose of Javax.sql package?

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Explain the different types of images used in HTML.

Or

- (b) What are the advantages of using JavaScript in web applications?

12. (a) Write brief note on the use of BDK in Java Beans development.

Or

- (b) What are customizers in Java Beans? Explain their role.

13. (a) Describe the structure of the javax.servlet package in Servlets.

Or

- (b) Illustrate the importance of initialization parameters in Servlets.

14. (a) Enumerate the JSP lifecycle and processing flow with an example.

Or

- (b) Describe the role of implicit objects in JSP development.

15. (a) Explain database programming using JDBC with a real-time example.

Or

- (b) Discuss the steps involved in deploying Java Beans in a JSP page.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the key features of HTML and discuss how CSS enhances webpage design.
 17. What are Java Beans? Explain their advantages and different types of properties.
 18. Discuss the role of Servlets in web development and explain their API structure.
 19. What is error handling in JSP? Explain different types of exception handling in JSP.
 20. Compare and contrast JDBC and Hibernate in Java database access.
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DISTANCE EDUCATION

**M.Sc. (Information Technology) DEGREE EXAMINATION,
DECEMBER 2025.**

Fourth Semester

SOFTWARE ENGINEERING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. What is the role of software?
2. Define layered technology.
3. What is a process framework?
4. What is process assessment?
5. What is a use case in requirement engineering?
6. What are functional and non-functional requirements?
7. List the different software architecture styles.
8. Define software validation testing.
9. What is white-box testing?
10. Write the purpose of integration testing.

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe the process of requirement engineering.

Or

- (b) Explain the importance of process patterns in software development.

12. (a) Compare class-based modeling and flow-oriented modeling.

Or

- (b) Explicate the key steps involved in user interface analysis.

13. (a) Elaborate any two software testing strategies.

Or

- (b) Describe the testing strategies of Object-Oriented software.

14. (a) What are the benefits of the Capability Maturity Model Integration (CMMI)? Explain them.

Or

- (b) Infer the significance of architectural design in software engineering.

15. (a) Confer the art of debugging in software development.

Or

- (b) Explain black-box testing and its advantages.

PART C — (3 × 10 = 30 marks)

Answer any **THREE** questions.

16. Describe the role of software engineering in project planning and management.
 17. Explain the requirement engineering processes in detail.
 18. Illustrate the key principles and steps involved in designing the user interfaces.
 19. Explicate the various design concepts.
 20. Discuss any two cost estimation techniques in software engineering.
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DISTANCE EDUCATION

**M.Sc. (Information Technology) DEGREE EXAMINATION,
DECEMBER 2025.**

Fourth Semester

CLOUD COMPUTING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. What are the key characteristics of cloud computing?
2. List two pros and cons of cloud computing.
3. Define cloud service development.
4. How does cloud computing improve communication?
5. What is the role of collaboration in cloud computing?
6. Name two examples of cloud-based word processing tools.
7. What is meant by privacy in cloud computing?
8. What are the security risks in cloud computing?
9. Define MapReduce in cloud computing.
10. Mention any two cloud storage providers.

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the different types of cloud computing models.

Or

- (b) Discuss the advantages and disadvantages of cloud computing.

12. (a) How does cloud computing help in online task management?

Or

- (b) Explain how cloud computing is used in household budget planning.

13. (a) Describe the benefits of online event management using cloud services.

Or

- (b) Explain how cloud services help in document sharing and collaboration.

14. (a) What are the different levels of cloud federation?

Or

- (b) Discuss various privacy concerns in cloud computing.

15. (a) Explain cloud storage architecture and its types.

Or

- (b) Compare Hadoop and OpenNebula in cloud deployment.

PART C — (3 × 10 = 30 marks)

Answer any **THREE** questions.

16. Explain the history, evolution, and fundamental principles of cloud computing.
 17. Discuss the role of cloud computing in email communication and scheduling.
 18. Describe different cloud-based collaboration tools with examples.
 19. Analyze the challenges of cloud security and discuss possible solutions.
 20. Explain cloud deployment tools and their impact on modern cloud computing.
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