D–2472	Sub. Code
	31311

DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

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 the questions.

1. Convert the following Binary numbers into Decimal Numbers. 10100110

2. What is Multiplexer?

3. Name the material commonly used to manufacture ICs.

4. What is an Arithmetic Logic Shift Unit (ALSU)?

5. Name the main stages of the instruction cycle.

6. Why are addressing modes important in computer architecture?

7. State the modes in Input / Output organization.

8. Mention the methods for insert NULL values in a column.

9. Discuss cache memory.

10. List out the Associative memory in memory organization.

PART B – (5 × 5 = 25 marks)

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

11. (a) Correlate from the truth table of NOR, and NAND gates.

Or

(b) Explain 4 - bit Decoder.

12. (a) Write short notes on Fixed Point Representation.

Or

(b) Describe about Bus and memory transfer.

13. (a) Distinguish between the hardwired and micro programmed control.

Or

(b) Elucidate data transfer and manipulation.

14. (a) Examine Multiplication Algorithms.

Or

(b) What are the modes of transfer and explain it.

15. (a) Write short notes on Memory Hierarchy.

Or

(b) Narrate about Virtual memory.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Discuss about the Basic Logic Gates with truth table.

17. Given the two binary numbers X = 1010100 and Y = 1000011, perform the subtraction (a) X - Y and (b) Y - X by using 2's complements.

18. Briefly explain in detail about Instruction cycle.

19. Discover in detail about Floating point arithmetic operations.

20. Explain: (a) Auxiliary memory (b) Associative memory

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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

First Semester

OBJECT ORIENTED PROGRAMMING AND JAVA

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. State two differences between Java and C++.

2. What is the use of the break statement?

3. What is constructor in Java?

4. Differentiate between arrays and vectors in Java.

5. Which interface is used to implement threads?

6. Name two ways to create a thread in Java.

7. How does an applet differ from Java application?

8. Recall the use of finally blocks in exception handling.

9. Recall the purpose of the File class.

10. Write the syntax to create a file using Java.

PART B – (5 × 5 = 25 marks)

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

11. (a) Discuss the structure of Java program with an example.

Or

(b) Explain implicit type casting with examples.

12. (a) Discuss method overloading with an example.

Or

(b) Write a program to demonstrate the use of two-dimensional array.

13. (a) How is synchronization achieved in Java? Explain with an example.

Or

(b) Compare extending the Thread class vs implementing the Runnable interface.

14. (a) Write a Java applet that draws a line and rectangle using the Graphics class.

Or

(b) Explain the difference between compile-time and runtime errors.

15. (a) Describe the concept of interactive input/output in Java.

Or

(b) Explain about random access file and its advantages.

PART C – (3 × 10 = 30 marks)

Answer any THREE questions

16. Describe the various types of operators in Java. Illustrate with appropriate examples.

17. What is the purpose of packages in Java? How do you create and use a package?

18. Explain the life cycle of thread with diagram.

19. Write a Java program to demonstrate exception handling using try, catch and finally.

20. Illustrate the difference between byte stream and character stream classes with examples.

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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

First Semester

DATA STRUCTURES AND ALGORITHMS

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Define the term data structure.

2. Give an example of primitive data type.

3. List any two applications of stacks.

4. What is meant by traversal in linked list?

5. What is meant by degree in binary tree?

6. Define hashing.

7. What is searching in data structures?

8. State the main condition for applying binary search.

9. Comment on divide-and-conquer method.

10. Why Bubble Sort is considered inefficient for large data?

PART B — (5 × 5 = 25 marks)

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

11. (a) Compare one-dimensional and two-dimensional arrays.

Or

(b) Compare time complexity and space complexity.

12. (a) Explain push and pop operations in stack with diagrams.

Or

(b) Write a short note on evaluation of expression using postfix notation.

13. (a) Classify the different types of binary trees with diagrams.

Or

(b) Describe the structure and properties of binary search tree.

14. (a) Explain linear search algorithm with an example.

Or

(b) State the advantages of binary search over linear search.

15. (a) Explain the working of Radix Sort with an example.

Or

(b) Write the recursive algorithm for Quick Sort.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the different types of data structures with examples.

17. Write algorithm for insertion and deletion operation in singly linked list. Illustrate with examples.

18. Describe the in-order, pre-order and post-order tree traversal methods with example,

19. Analyze the time and space complexity of binary search.

20. Compare Insertion Sort and Selection Sort based on time complexity and stability.

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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

Second Semester

DATA MINING AND WAREHOUSING

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Give the concept of Star Schema in Data Warehousing.

2. Explain data transformation?

3. Define FP-tree.

4. What is classification in data mining?

5. Quote the main idea behind the DBSCAN algorithm.

6. Define neural networks.

7. What is Web Content Mining?

8. Mention any two features of RapidMiner.

9. What is meant by structured and unstructured data?

10. List out the core components of Hadoop.

PART B – (5 × 5 = 25 marks)

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

11. (a) Describe different types of warehouse schemas

Or

(b) Elaborate on the concept of data preprocessing and the importance of data quality.

12. (a) How does the Partition algorithm work in discovering association rules?

Or

(b) Write short notes on Pincher Search algorithm.

13. (a) Explain how DBSCAN handles noise in data.

Or

(b) Express the main steps involved in the working of a neural network.

14. (a) Describe the role of time in Temporal Data Mining.

Or

(b) Illustrate any two tools used for visual data mining.

15. (a) Write short notes on any two technologies available for Big Data.

Or

(b) Describe the physical architecture of Hadoop with a neat diagram.

PART C – (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain the various OLAP operations in detail with examples.

17. Describe the backpropagation algorithm used in classification. Illustrate with a neural network structure.

18. Develop CLARA and CLARANS algorithms. How do they improve clustering scalability?

19. Summarize the process of text clustering. Compare different clustering algorithms used in text mining.

20. Write a detailed note on the limitations of Hadoop. Suggest alternatives or improvements.

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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

Second Semester

RELATIONAL DATABASE MANAGEMENT SYSTEMS (RDBMS)

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define database.

2. Brief composite entities and how are they used for?

3. What are the key terms in relational model?

4. Define relational algebra.

5. Write syntax for creating an oracle table.

6. In which situation would you use a self-join.

7. List out the key properties of SQL transactions.

8. How to retrieving data from a table?

9. Define storage devices.

10. What are the File organization and indexing?

PART B – (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Explain the components of the database manager.

Or

(b) Difference between the relationship and relationship set.

12. (a) Elucidate in detail about derived operators in DBMS.

Or

(b) Clarify about Domain relational calculus.

13. (a) Narrate about Multi-valued dependencies.

Or

(b) What is dependency? Write short notes on dependency diagram.

14. (a) Discuss Serialization.

Or

(b) Illustrate the Remote Backup Systems.

15. (a) Clarify Hash based indexing.

Or

(b) Explain the concept and working of tree-based indexes in databases. How do B-Trees and and B+ Trees help in efficient searching?

PART C – (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain in detail about categorize of relational models.

17. Elucidate and compare the expressive power of Relational Algebra and Relational Calculus

18. List out the different types of SQL joins in DBMS.

19. Explain about SQL transaction commands.

20. Discuss in detail about ISAM.

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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

Second Semester

Information Technology

VISUAL PROGRAMMING WITH .NET

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define Work Area in Visual Studio.
2. Name any two project types supported by Visual Studio.
3. Brief class snippet.
4. Characterize the auto-implemented properties.
5. Write the steps to open an interface snippet
6. What does assembly name offers?
7. List the use of the Locals window?
8. Define IntelliTrace in Visual Studio.
9. How do you set a property in a WPF control?
10. What is Silverlight used for?

PART B – (5 × 5 = 25 marks)

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

11. (a) Describe the purpose of Solution Explorer and its components.

Or

(b) Differentiate between Windows Projects and Web Projects.

12. (a) What are accessors? Explain with a sample code

Or

(b) What is the significance of namespace? Write the syntax for creating a namespace.

13. (a) Elucidate how you will create an event and delegate

Or

(b) What are the property settings in solution explorer?

14. (a) Discuss the differences between Locals and Autos windows with examples.

Or

(b) How do you relate two tables using foreign keys in a database?

15. (a) State all five layout types in WPF: Grid, StackPanel, WrapPanel, DockPanel, and Canvas.

Or

(b) Explain how to bind a ComboBox with a data source in WPF.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. "Explain the key components and features of the Visual Studio IDE. Describe the various types of projects that can be created using Visual Studio.

17. Discuss the structure and use of code snippets in Visual Studio Code. Create custom snippets for class and property declarations.

18. Describe the process of compiling, rebuilding, and cleaning a solution in Visual Studio.What are the benefits of each action?

19. Demonstrate how to watch and track variables during runtime using Watch Windows and Pin to Source feature in Visual Studio.

20. Write short notes on:

    (a) Creating and deploying a WCF service

    (b) Using WCF for communication between client and server.

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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

Third Semester

OPEN SOURCE SOFTWARE

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. What is the difference between kernel mode and user mode?

2. List any two popular Linux distributions.

3. Delineate metadata.

4. Give an example for date function in MySQL.

5. Mention any two data types in PHP.

6. Write an example for string concatenation.

7. What is Dictionary in Python?

8. Define Python module.

9. Write a note on Perl array declaration.

10. Expand CPAN.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Discuss the need for open source software in modern IT.

Or

(b) What are the features of Linux operating system?

12. (a) Explain about record selection using WHERE and LIKE.

Or

(b) Classify the different types of metadata in MySQL?

13. (a) Describe OOP features in PHP.

Or

(b) Enumerate on PUP security practices.

14. (a) Elaborate on Python syntax and indentation rules.

Or

(b) Describe Python module and how is it used.

15. (a) Write a script to manipulate text data.

Or

(b) Explain about hash and array manipulation in Perl.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Illustrate the architecture and components of Linux operating system.

17. Discuss the complete workflow of building a MySQL-powered web application.

18. Analyse the concept of PHP templates and security best practices.

19. Explain the complete structure and environment of Python program execution.

20. Enlighten Perl variable types and their usage with examples.

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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

Third Semester

OPERATING SYSTEMS

(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 multiprogramming?

2. List out any two types of system programs.

3. What is a PCB?

4. List any two IPC mechanisms.

5. What is meant by synchronization?

6. Mention any two conditions for deadlock.

7. Delineate swapping.

8. Elucidate on virtual memory.

9. Define file protection.

10. What is meant by disk scheduling?

PART B — (5 × 5 = 25 marks)

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

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

Or

(b) What are the major components of system programs? Discuss.

12. (a) Explain the process scheduling criteria.

Or

(b) Discuss about operations performed on processes.

13. (a) Explain the characterization of Deadlocks.

Or

(b) Examine the concept of Classic Problems of Synchronization with example.

14. (a) Compare paging and segmentation.

Or

(b) Elaborate on Segmentation with neat diagram.

15. (a) Describe the various file access methods.

Or

(b) Classify the any two types of disk scheduling algorithms.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the architecture of computer system with neat diagram.

17. Demonstrate the process life cycle with a state diagram.

18. Explain the following :

    (a) Deadlock Prevention

    (b) Dead Avoidance

19. Discuss about contiguous memory allocation with neat diagram.

20. Elaborate on secondary storage structure and disk attachment methods.

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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

Third Semester

COMPUTER NETWORKS

(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 topology in networking?

2. Define analog and digital signals.

3. Recall the purpose of the data link layer.

4. What is block coding?

5. What is circuit switching?

6. Comment on hierarchical routing.

7. State the purpose of Remote Logon.

8. Differentiate between connection-oriented and connectionless services.

9. Define encryption and decryption.

10. Name two symmetric key algorithms.

PART B — (5 × 5 = 25 marks)

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

11. (a) State the various applications of computer networks.

Or

(b) Classify the types of transmission modes with example.

12. (a) Describe cyclic redundancy check with simple example.

Or

(b) What is selective repeat ARQ and how does it work?

13. (a) Write a short note on link state routing.

Or

(b) Explain flooding and mention its advantages and disadvantages.

14. (a) Explain the working of Domain Name System.

Or

(b) Explain HTTP protocol and its role in web communication.

15. (a) Explain the working of Data Encryption Standard in brief.

Or

(b) Analyze the importance of cryptography in network security.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the OSI model with the function of each layer.

17. Explain flow and error control in the data link layer with examples.

18. Describe the shortest path routing algorithm with an example.

19. Illustrate the working of TCP and describe how it establishes and terminates a connection

20. Compare and explain transposition and substitution ciphers with suitable examples.

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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

Fourth Semester

Information Technology

WEB TECHNOLOGY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Write a syntax to create a list in HTML.

2. Explain DTD in XML.

3. Describe BDK in Java Beans.

4. Define constrained properties in Java Beans.

5. List out two features of the Tomcat Web Server.

6. Mention the session tracking in servlets.

7. What is an expression tag in JSP?

8. List any four implicit objects in JSP.

9. Give the use of the Struts-config.xml file.

10. Delineate ResultSet in JDBC.

PART B – (5 × 5 = 25 marks)

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

11. (a) Describe the role of JavaScript in Dynamic HTML.

Or

(b) Explain the importance of XML schemas with an example.

12. (a) Discuss the role and features of the Bean Development Kit (BDK).

Or

(b) Briefly introduce Enterprise JavaBeans (EJB) and their significance.

13. (a) Write a servlet program to demonstrate the use of doGet () method.

Or

(b) Summarize the security issues related to servlet-based web applications.

14. (a) Elucidate the structure (anatomy) of a JSP page with an example.

Or

(b) Write short notes on passing control between JSP pages using forward and include.

15. (a) Illustrate the features of the javax. sql . * package.

Or

(b) Compare and contrast Statement and PreparedStatement in JDBC.

PART C— (3 × 10 = 30 marks)

Answer any THREE questions

16. What is JavaScript? Write a program using JavaScript to validate a form input.

17. Explain the Java Beans API in detail. How does it help in developing reusable software components?

18. Describe the role of JSDK in servlet development. How is it used in the servlet API?

19. Discuss how data is shared across JSP pages using request, session and application scopes.

20. Elucidate the steps to create a Struts-based web application.

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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

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. List the layers of software engineering technology.

2. Define the term “software process”.

3. What is object-oriented analysis?

4. List out any two flow-oriented models.

5. Elucidate on design model.

6. Mention any two goals o-f interface design.

7. What are product metrics?

8. What do you mean by white-box testing?

9. Delineate risk refinement.

10. What is a formal technical review?

PART B — (5 × 5 = 25 marks)

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

11. (a) What are the common software myths? Explain.

Or

(b) Discuss the structure and significance of CMMI.

12. (a) Describe the requirement engineering process.

Or

(b) Give a brief notes on data modeling.

13. (a) Describe the design process and quality attributes.

Or

(b) Explain interface analysis and evaluation.

14. (a) Describe different software testing strategies.

Or

(b) What are metrics for design and testing?

15. (a) Discuss reactive vs proactive risk strategies.

Or

(b) Describe software quality assurance activities.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the generic view of a software process with layered technology.

17. Compare and contrast scenario-based and class-based modeling.

18. Explain the software design model with relevant diagrams.

19. Discuss black-box and white-box testing strategies with examples.

20. Elaborate on RMMM plan and its components.

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DISTANCE EDUCATION

M.Sc. (Information Technology) DEGREE EXAMINATION, MAY 2026.

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. Write down the role of virtualization in cloud computing.

2. Define SaaS.

3. What is the benefit of centralizing email communication?

4. Mention any one tool used for household budget collaboration.

5. Give an example of an online calendar application.

6. State any one contact management tool.

7. Describe federation in cloud computing.

8. Define Aneka.

9. Name any two services provided by Eucalyptus.

10. How is OpenNebula used?

PART B — (5 × 5 = 25 marks)

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

11. (a) Brief the working of cloud computing.

Or

(b) Describe the types of cloud services available today.

12. (a) Explain the features of collaborative scheduling applications.

Or

(b) Discuss how cloud computing supports group projects and event planning.

13. (a) How does cloud computing support event management?

Or

(b) Illustrate different methods to store and share content using cloud services.

14. (a) Write a short note on Software as a Security Service (SECaaS) with examples.

Or

(b) Explain the features and usage of Amazon S3 as a cloud storage provider.

15. (a) Summarize open-source cloud platforms with examples.

Or

(b) State the features and capabilities of Nimbus as a cloud toolkit.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Sketch various types of cloud service development models with real-world examples.

17. Discuss the methods and tools used for collaborating on schedules, contact lists, and budgets with practical examples.

18. Explain in detail the collaborative features of project and contact management tools in cloud computing.

19. Conclude MapReduce and Hadoop in detail. How are they used in processing large-scale cloud data?

20. Discover the architecture and working of Eucalyptus in detail.

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