D–8474	Sub. Code
	31311

DISTANCE EDUCATION

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

First Semester

COMPUTER ORGANIZATION AND ARCHITECTURE

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define Boolean algebra and list its basic operations.

2. What is the purpose of a multiplexer in digital circuits?

3. Define virtual memory.

4. Differentiate between combinational and sequential circuits.

5. What are the functions of the Arithmetic Logic Unit (ALU)?

6. What is the role of cache memory in a computer system?

7. What is the significance of addressing modes in computer instructions?

8. Define the term “instruction cycle” in computer organization.

9. List the types of micro operations in a computer system.

10. What is the function of an Input-Output processor (IOP)?

PART B — ($5 \times 5 = 25$ marks)

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

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

Or

(b) Discuss the importance of Boolean Algebra in designing digital circuits.

12. (a) Describe the different types of registers used in computer systems.

Or

(b) Explain the concept of floating-point representation in computer arithmetic.

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

Or

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

14. (a) Explain the different types of addressing modes in computer instructions.

Or

(b) Describe the process of asynchronous data transfer.

15. (a) Discuss the role of the control unit in a computer system.

Or

(b) Explain the concept of Direct Memory Access (DMA).

PART C — ($3 \times 10 = 30$ 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 memory organization techniques used in computer systems.

19. Discuss the algorithms used for binary addition, subtraction, multiplication, and division.

20. Explain the concept of interrupt handling and its importance in computer systems.

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DISTANCE EDUCATION

M.Sc.(Information Technology) DEGREE EXAMINATION, MAY 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 the questions.

1. List any two-java support systems.

2. Define token.

3. What is single-dimensional array?

4. List the types of packages in java.

5. What is deadlock?

6. List the life cycle of thread.

7. What is bar chart?

8. What is exception?

9. What is the use of byte stream class?

10. List the default delimiters in string Tokenizer class.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) List and discuss about the applications of OOP.

Or

(b) Describe the features of java.

12. (a) Write a short note on constructor in Java.

Or

(b) Explain the use the final keyword in Java.

13. (a) How to create a thread in java? Explain.

Or

(b) Discuss about the thread priority.

14. (a) List and explain the methods available by graphic class in applet.

Or

(b) Different console-based applications and applets.

15. (a) What is stream? Explain about its types.

Or

(b) Write a note on RandomAccessFile class and its purpose.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write a detailed note on various operators in java.

17. Define inheritance. Explain about its types.

18. Describe about the synchronization of thread with an example.

19. Illustrate life cycle of an applet.

20. Describe about the different classes used for handling files in java with an example?

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DISTANCE EDUCATION

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

First Semester

DATA STRUCTURE AND ALGORITHMS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. What is a queue?

2. List out any four operations of arrays.

3. What is reversing strings?

4. What is done to insert a node at the end of a linked list?

5. Write the steps for inserting a node in a binary search tree.

6. Differentiate complete and extended binary tree.

7. Mention the any three searching techniques.

8. What is the time complexity of linear search in the best-case scenario, and how many comparisons are required?

9. Define bucket sorting.

10. What is quick sort?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Discuss about the time and space complexity of algorithms.

Or

(b) Write a short note on single dimensional arrays.

12. (a) How to convert infix to postfix notation? Explain with example.

Or

(b) Write a short note on Deque.

13. (a) Explain about the quadratic probing in hashing technique.

Or

(b) Describe about the traversing binary trees.

14. (a) Write an algorithm for binary search and its technique.

Or

(b) Explain the algorithm for linear search.

15. (a) Write an algorithm for insertion sort with suitable example.

Or

(b) Discuss briefly about selection sort algorithm.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss the various data structures in detail.

17. What is linked list? Explain its types with its operations.

18. Describe binary tree and its representation in detail.

19. Explain about fibonacci search with algorithm in detail.

20. Discuss about the concept of quick sort with an example.

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DISTANCE EDUCATION

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

Second Semester

DATA MINING AND WAREHOUSING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. What role does the data mining engine play in data mining architecture?

2. Name two common techniques used in exploratory data analysis.

3. Differentiate strong association rule and a weak association rule.

4. How does a decision tree classify data?

5. Specify the main idea behind model-based clustering paradigms. Provide an example of such a model.

6. Name and discuss two types of machine learning approaches used in data mining.

7. Mention two common techniques used in web content mining and discuss their purpose.

8. Write short notes how does knowledge mining contribute to business intelligence?

9. State "3 Vs" that characterize big data in data mining.

10. List the lack of real-time processing capability affects Hadoop's use in big data applications?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Illustrate the main components of a data mining architecture and explain the role of each components in the data mining process.

Or

(b) Differentiate structured and unstructured data, and describe how each type is handled in data mining.

12. (a) Describe the process of how the dynamic itemset algorithm identifies frequent itemsets. Include details on how it handles candidate generation and pruning.

Or

(b) How can pruning be used to improve the performance of a decision tree? Describe the methods of pruning and their impact on the model. Explain.

13. (a) Enlighten the concept of hierarchical clustering in data mining. What are the two main types of hierarchical clustering methods?

Or

(b) Explicate BIRCH clustering algorithm. What are the main components of the BIRCH algorithm and how do they contribute to its efficiency?

14. (a) Discuss the challenges and limitations associated with web mining. How can these challenges be addressed? Explain in detail.

Or

(b) Enlighten the conception of temporal data mining and its significance in data mining. What types of patterns are typically discovered through temporal mining?

15. (a) How do data storage and retrieval methods differ between traditional databases and big data technologies? Discuss.

Or

(b) What are the security limitations of Hadoop, and how do they impact data privacy and protection? Explain.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. How can interactive visualizations improve the exploratory data analysis process? Provide an example of an interactive visualization tool and its features.

17. Compare the Apriori algorithm and the partition algorithm in terms of their approach to mining frequent itemsets and their performance.

18. Discriminate supervised and unsupervised machine learning. What are the key differences in terms of learning process and data requirements?

19. Illustrate the process of text mining in data mining, including key techniques and steps involved.

20. Explain the role of Hadoop and its ecosystem in big data processing. Include descriptions of core components such as HDFS, MapRedce, and key ecosystem tools.

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DISTANCE EDUCATION

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

Second Semester

RELATIONAL DATABASE MANAGEMENT SYSTEMS (RDBMS)

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)
Answer ALL the questions.

1. What is instance?

2. List out the types of database languages.

3. What are the various types of keys in database?

4. Define selection operation in relational algebra.

5. With an example specify the INTERSECT operation in SQL.

6. Give the aggregate operations with example.

7. What do you can by SAVE POINT?

8. Define schedule in transaction.

9. What are the uses of buffer manager?

10. Define B+ tree.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What do you mean by aggregation in ER diagram?

Or

(b) Who are the people working with Database?

12. (a) List out and explain the types of JOIN operations.

Or

(b) Give and explain the DML commands with example.

13. (a) Discuss on fourth normal form.

Or

(b) With an example explain about Nested Queries.

14. (a) Explicate about lock based protocols.

Or

(b) Explicate about the remote backup system.

15. (a) Write a note on tree based indexing.

Or

(b) Write a short notes on indexed sequential access methods (ISAM).

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Draw an ER diagram for any real time application an explain it.

17. With an example explain relational algebra operations.

18. What do you mean by Boyce code normal form?

19. How will you test for serializability in transactions?

20. Describe about the B+ tree dynamic index structure.

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DISTANCE EDUCATION

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

Second Semester

VISUAL PROGRAMMING WITH .NET

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. List out the types of projects.

2. How will you add a component in a toolbox?

3. Write the syntax for creating the namespace.

4. Write the template code of property snippet.

5. Define interface.

6. Define an event with example.

7. What do you mean by stored procedures?

8. Give the use of watch window.

9. List out the folders created while working with MVC.

10. Specify the sections of a designer.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) How will you add Service References to Solution Explorer?

Or

(b) How will you access the Windows Projects?

12. (a) Specify and explain the branching statements with example.

Or

(b) Write a note on passing values to methods.

13. (a) Create an interface and explain it.

Or

(b) What are the various uses of Solution Folders?

14. (a) Describe about quick stackwindow.

Or

(b) Relate any two tables using foreign keys.

15. (a) Write a note on Combox.

Or

(b) Write a note building controllers.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write a note on Tool Box Window in Visual Studio.

17. Specify and explain the looping statements with example.

18. Explain about the ClassView.

19. Briefly explain about breakpoints.

20. How will you add a data source?

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DISTANCE EDUCATION

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

Third Semester

OPEN SOURCE SOFTWARE

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define open-source software.

2. Mention the difference between kernel mode and user mode in Linux.

3. List any two MySQL string functions.

4. What are the purpose of metadata in MySQL?

5. What is the purpose of PHP variables?

6. How PHP connects to a MySQL database?

7. Define a tuple in python.

8. How Python handles errors using exceptions?

9. What is a Perl subroutine?

10. List out the role of control structures in Perl.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Illustrate the advantages of open-source software.

Or

(b) Compare different process scheduling techniques in Linux.

12. (a) Demonstrate how to retrieve and format date and time values in MySQL.

Or

(b) Analyze the importance of sorting query results in MySQL databases.

13. (a) Implement a PHP script to handle file uploads.

Or

(b) Examine the role of PHP in dynamic web development.

14. (a) Write a Python program to demonstrate dictionary operations.

Or

(b) Differentiate between lists and tuples with suitable examples.

15. (a) Implement a Perl program to read and write files.

Or

(b) Examine how Perl handles subroutines for code reusability.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the need for open-source operating systems in modern computing with case studies.

17. Design a MySQL database schema to manage student records and implement queries for data retrieval.

18. Discuss the impact of PHP security vulnerabilities and propose solutions to mitigate risks.

19. Develop a Python-based file management program that performs reading, writing and exception handling.

20. Analyze the advantages and limitations of using Perl for data processing applications.

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DISTANCE EDUCATION

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

Third Semester

OPERATING SYSTEMS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define an operating system.

2. What are system calls? Provide an example.

3. Differentiate between a process and a thread.

4. What is context switching?

5. Define a critical section in process synchronization.

6. What is a semaphore?

7. Explain paging in memory management.

8. What is internal fragmentation?

9. List any two file access methods.

10. Define disk scheduling.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the different types of operating system structure.

Or

(b) Describe various operating system services with examples.

12. (a) Explain different CPU scheduling algorithm.

Or

(b) Describe inter-process communication and its mechanisms.

13. (a) Explain the critical section problem with an example.

Or

(b) Discuss deadlock detection and recovery methods.

14. (a) Describe different memory allocation techniques.

Or

(b) Explain the differences between paging and segmentation.

15. (a) Discuss various file allocation methods.

Or

(b) Explain different disk scheduling algorithms.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail the various types of operating systems with their advantages and disadvantages.

17. Illustrate any two process scheduling algorithms with example.

18. Discuss different methods used for handling deadlocks.

19. Explain the memory management techniques in detail.

20. Describe the structure of a file system and explain file system implementation methods.

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DISTANCE EDUCATION

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

Third Semester

COMPUTER NETWORKS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define point-to-point connection.

2. Expand LAN and WAN.

3. What is token passing?

4. Define piggy backing.

5. List the three common switching techniques.

6. Define Broadcasting.

7. Expand UDP and TCP.

8. Define hypertext transfer protocol.

9. Differentiate encryption and decryption algorithm..

10. Define key generation.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain about applications of computer networks.

Or

(b) Describe about the unguided transmission media.

12. (a) Write a short note on framing in Data link layer.

Or

(b) Describe the significance of carrier sense multiple access.

13. (a) Write down the comparison of virtual circuit and database subnets.

Or

(b) What are the advantages and disadvantages of static routing?

14. (a) Differentiate connection oriented and connectionless service.

Or

(b) Write a short note on World Wide Web.

15. (a) List and explain the components of a cryptosystem.

Or

(b) Describe about the network security services.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain about the topology in computer networks.

17. Describe about the cyclic redundancy check in detail.

18. Elucidate about link state routing.

19. Discuss about domain name system in detail.

20. Write a detail note on transposition and substitution ciphers.

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DISTANCE EDUCATION

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

Fourth Semester

WEB TECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. What are HTML frames?

2. Define Cascading Style Sheets (CSS).

3. What is the purpose of JavaScript in web development?

4. Define XML Schema.

5. What are Java Beans? List any two advantages.

6. List the lifecycle of a servlet.

7. What is session tracking in servlets?

8. Write the concept of MVC in JSP.

9. What is JDBC in Java?

10. What is the purpose of the struts framework?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain different types of lists in HTML with examples.

Or

(b) What are the advantages of using CSS in web development?

12. (a) Describe the features of Java beans and its significance in Java applications.

Or

(b) Illustrate the concept of bound and constrained properties in Java beans.

13. (a) Discuss the lifecycle of a servlet with a suitable diagram.

Or

(b) Enumerate how cookies are used for session tracking in Servlets.

14. (a) What are the key components of a JSP page? Explain with an example.

Or

(b) Describe the error-handling mechanisms in JSP.

15. (a) Explain the JDBC architecture with an example.

Or

(b) Write brief note on how Java Beans are deployed in JSP pages.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Illustrate the significance of XML in web applications and explain its key.

17. Explain the advantages of Java beans and describe its role in enterprise Java applications.

18. Compare and contrast GET and POST methods in Servlets with examples.

19. Explain how MVC architecture is used in JSP applications with a case study.

20. Discuss the importance of the struts framework in Java web applications and explain its architecture.

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DISTANCE EDUCATION

M.Sc.(Information Technology) DEGREE EXAMINATION, MAY 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. Define software engineering.

2. What are software myths? Provide an example.

3. List the layers of software engineering.

4. Differentiate between the waterfall model and the incremental model.

5. What is the purpose of the Capability Maturity Model Integration (CMMI)?

6. Define requirement engineering.

7. What are the key elements of data model?

8. What are the golden rules of user interface design?

9. Define black-box testing.

10. Write the significance of system testing.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the personal and team process models.

Or

(b) Explicate the process of validating requirements.

12. (a) Compare the evolutionary and unified process models.

Or

(b) Describe the role of architectural styles in software design.

13. (a) What is object-oriented analysis? Explain with an example.

Or

(b) Illustrate the steps involved in the software design process.

14. (a) Infer the importance of software testing strategies.

Or

(b) Elaborate the concepts of integration testing approach.

15. (a) What are the advantages of white-box testing? Explain them.

Or

(b) Illuminate the importance of debugging concepts in software development.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe the activities of any two software development process models.

17. Explicate the different architectural design patterns used in software engineering.

18. Elaborate the various testing strategies and their significance briefly.

19. Explain the concept of cost estimation in software engineering and its techniques.

20. Discuss the importance of risk management in software projects.

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DISTANCE EDUCATION

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

Fourth Semester

CLOUD COMPUTING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define cloud computing.

2. What are the benefits of cloud computing?

3. What is cloud service development?

4. Mention two real-world applications of cloud collaboration.

5. What is event management in cloud services?

6. How does online word processing help in collaboration?

7. What are the four levels of federation in cloud computing?

8. What is the role of security in cloud computing?

9. What is cloud storage, and given an example?

10. Name any two open-source cloud platforms.

PART B — ($5 \times 5 = 25$ marks)

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

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

Or

(b) Discuss the pros and cons of cloud computing.

12. (a) How does cloud computing help in household budget collaboration?

Or

(b) Describe the use of cloud computing in group projects and events.

13. (a) Explain the importance of online scheduling applications.

Or

(b) What are the advantages of collaborating on databases in the cloud?

14. (a) Describe the concept of federation in cloud computing.

Or

(b) How does privacy work in cloud computing?

15. (a) Explain the importance of MapReduce in cloud storage.

Or

(b) Compare Eucalyptus and OpenNebula as open-source cloud platforms.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss the fundaments of cloud computing, including history, working and benefits.

17. Explain various ways cloud computing is used for communication and collaboration in daily life.

18. Evaluate different cloud services such as event management, scheduling and word processing.

19. Analyze security challenges in cloud computing and methods to overcome them.

20. Explain cloud storages, cloud deployment tools, and open-source platforms with examples.

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