D–2460	Sub. Code
	34111

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
MAY 2026.

First Semester

DESIGN AND ANALYSIS OF ALGORITHMS

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. List any two characteristics of good algorithm.

2. Identify the purpose of pseudo code.

3. Define sequential search.

4. What is closest-pair problem?

5. What is minimum spanning tree?

6. State the main idea behind the greedy method.

7. What is meant by presorting?

8. Define reduction.

9. Define Hamiltonian cycle.

10. Comment on spanning tree.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Discuss the fundamentals of algorithmic problem solving.

Or

(b) Elaborate note on time complexity with example.

12. (a) Write short notes on binary search.

Or

(b) Explain the analysis of recursive algorithms with an example.

13. (a) Develop a Floyd's algorithm for all-pairs shortest paths.

Or

(b) Write short notes on Prim's algorithm.

14. (a) Describe the insertion sort algorithm with example.

Or

(b) Write short notes on reduction to graph problems.

15. (a) Describe the sum of subsets problem with an example.

Or

(b) Explain the assignment problem with a suitable example.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Compare and Contrast different asymptotic notations with their definitions, examples and comparisons.

17. Explain the divide and conquer approach and apply it to quick sort.

18. Define knapsack problem. Discuss how greedy approach is applied to it

19. Analyze the DFS and BFS algorithms based on their applications.

20. Examine the 8-queens problem and describe its solution using backtracking.

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D–2461

Sub. Code
34112

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
MAY 2026.

First Semester

APPLIED MATHEMATICS FOR COMPUTER SCIENCE

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define a truth functional statement. ‘

2. What do you meant by equivalence of formulae?

3. Define open statement.

4. State predicate calculus.

5. Define degree of a vertex.

6. Command spanning tree.

7. What is an objective function?

8. Define slack variable.

9. Define transportation problem.

10. What is optimality test?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Construct the truth table for $(p \wedge q) \vee r$.

Or

(b) Explain any two logical connectives with truth tables.

12. (a) Explain valid formula and equivalence.

Or

(b) Explain universal and existential quantifiers.

13. (a) In any graph *G*, then prove that the number of vertices of odd degree is even.

Or

(b) Show that a tree with n vertices has n-1 edges

14. (a) Solve the following LPP by graphical method

Maximize $z = 5x_1 + 3x_2$

Subject to constraints $x_1 + x_2 \leq 6$

$2x_1 + 3x_2 \geq 6$ and $x_1, x_2 \geq 0$.

Or

(b) Define:

(i) Basic feasible solution

(ii) Optimum basic feasible solution

15. (a) State mathematical formulation for transportation problem.

Or

(b) Find the optimum assignment schedule

	E	F	G	H
A	1	4	6	3
B	9	7	10	9
C	4	5	11	7
D	8	7	8	5

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the rules for constructing WFFs and illustrate with examples.

17. (a) Explain theory of inference.

(b) Prove using inference rules: $p \to q, q \to r \models p \to r$

18. Draw a K_5 graph and find its incidence and adjacent matrix.

19. Use simplex method to solve the following LPP

Maximize $z = 4x_1 + 10x_2$

Subject to constraints $2x_1 + x_2 \le 50$,

$$2x_1 + 5x_2 \le 100,$$

$$2x_1 + 3x_2 \le 90 \text{ and } x_1, x_2 \ge 0 .$$

20. Obtain an initial basic feasible solution for the transportation problem by VAM.

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	

D–2462	Sub. Code
	34113

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
MAY 2026.

First Semester

ADVANCED JAVA PROGRAMMING

(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 purpose of JDBC in Java applications.

2. What is the use of Database MetaData in JDBC?

3. Distinguish between SQL Exception and SQL Warning.

4. State the function of Result Set in JDBC.

5. Define InetAddress and mention any one of its methods.

6. State the role of a TCP/IP client socket.

7. Give the purpose of URL Connection in Java.

8. State the significance of RMI in distributed applications.

9. List any two features of JavaBeans.

10. State any two advantages of using Servlets

PART B – (5 × 5 = 25 marks)

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

11. (a) Illustrate the architecture of JDBC with a neat diagram.

Or

(b) Outline the sequence of steps involved in connecting a Java application to a database.

12. (a) Analyze the structure and handling of SQL exceptions in JDBC programs.

Or

(b) Summarize the role and importance of SQL warnings during database operations.

13. (a) Compare TCP/IP client sockets and server sockets used in Java networking.

Or

(b) Present the functions and methods supported by the InetAddress class.

14. (a) Demonstrate the working model of Java RMI with suitable diagrams.

Or

(b) Construct a simple client-server application using RMI and list its steps.

15. (a) Trace the complete life cycle of a servlet with appropriate flow diagram.

Or

(b) Classify various session tracking techniques employed in servlet-based applications.

PART C – (3 × 10 = 30 marks)

Answer any THREE questions

16. Identify and explain different types of JDBC drivers used in Java.

17. State and explain the purpose of DatabaseMetaData and ResultSetMetaData in JDBC programs.

18. Describe datagram communication in Java and mention its advantages and limitations.

19. Explain how remote method calls are carried out in Java RMI applications.

20. Write notes on JavaBeans features such as properties, events, and persistence.

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D–2463

Sub. Code
34121

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
MAY 2026.

Second Semester

COMPUTER SYSTEM ARCHITECTURE

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Comment on dependability.

2. What is meant by power efficiency in processors?

3. Mention the two types of data hazards.

4. Recall the purpose of branch prediction.

5. What is thread-level parallelism?

6. Define synchronization in parallel systems.

7. What do you mean by memory protection?

8. What is cache hit and miss?

9. What is seek time in disk?

10. Define Mean Time To Failure.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Describe the various metrics used to measure system performance.

Or

(b) Compare and contrast performance-focused design and cost-focused design.

12. (a) Differentiate between static and dynamic scheduling.

Or

(b) Discuss the role of instruction delivery techniques in improving ILP.

13. (a) Compare and contrast symmetric and distributed shared memory.

Or

(b) Explain the concept of memory consistency and why it is important.

14. (a) Explain any two techniques used to optimize cache performance.

Or

(b) What is virtual memory and how is it implemented? Explain.

15. (a) Explain the significance of the Internet Archive Cluster.

Or

(b) Discuss the impact of disk faults and failures on system performance.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Elaborate note on the principles of quality computer design.

17. Evaluate the challenges and limitations of ILP in modern processor design.

18. Examine the performance of symmetric shared memory multiprocessors.

19. Describe how virtual machines are implemented and how they manage memory protection.

20. Analyze how queuing theory helps in evaluating and improving I/O performance.

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D–2464	Sub. Code
	34122

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
MAY 2026.

Second Semester

Computer Science

DISTRIBUTED OPERATING SYSTEM

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Define LAN and WAN.

2. Comment on internetworking.

3. What is multi-datagram message?

4. What is failure handling in distributed systems?

5. What is heterogeneous DSM system?

6. Mention the purpose of election algorithm.

7. Define atomic transaction.

8. What is fault tolerance?

9. What is authentication?

10. What is passive attack?

PART B – (5 × 5 = 25 marks)

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

11. (a) Explain the evolution of distributed operating systems.

Or

(b) What is ATM technology? Mention its key characteristics.

12. (a) Examine the significance of process addressing in communication.

Or

(b) Explain buffering and its types.

13. (a) Discuss any one replacement strategy used in DSM.

Or

(b) Explain clock synchronization in distributed systems.

14. (a) State the desirable features of distributed file system.

Or

(b) Explain the role of fault tolerance in DFS.

15. (a) Explain the concept of access control with an example.

Or

(b) Describe the role of hash functions in digital signatures.

PART C – (3 × 10 = 30 marks)

Answer any THREE questions

16. Analyze the role of communication protocols in ensuring reliable and secure data transmission in computer networks.

17. Classify the various synchronization mechanisms used in message passing.

18. Describe the structure of shared memory in DSM system.

19. Explain various file accessing models with examples.

20. Illustrate the working of cryptographic systems. Give an example.

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D–2465	Sub. Code
	34123

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2026.

Second Semester

Computer Science

.NET PROGRAMMING

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)
Answer ALL questions.

1. What is an assembly in .NET?

2. Differentiate between class and structure.

3. Name any two data types used in VB.NET.

4. What is a dynamic array?

5. Define runtime error.

6. What is a ComboBox?

7. Name any two file types used in an ASP.NET web application.

8. Recall the role of the Server object in ASP.NET.

9. Define DataColumn.

10. What is ADO.NET?

PART B – (5 × 5 = 25 marks)

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

11. (a) What is encapsulation? Give a real-life example.

Or

(b) Differentiate between compile-time and run-time polymorphism.

12. (a) Describe the features and purpose of an MDI form.

Or

(b) Explain how message boxes and input boxes are used in Windows Forms applications.

13. (a) Compare RadioButton and CheckBox controls with examples.

Or

(b) Describe the role and usage of pickers.

14. (a) Explain the purpose of HttpRequest and HttpResponse objects.

Or

(b) Write a short note on custom controls in ASP.NET.

15. (a) Differentiate between DataGrid and DataList.

Or

(b) Explain the concept of data binding with an example.

PART C – (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain the components of .NET Framework and their uses.

17. Describe the looping control statements in VB.NET with example.

18. Describe the function of ToolBar, StatusBar and ProgressBar controls.

19. Discuss the various validation controls in ASP.NET.

20. Write a program in ASP.NET to fetch data from a SQL database and display it using a DataGrid control.

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D–2466	Sub. Code
	34131

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
MAY 2026.

Third Semester

CRYPTOGRAPHY AND NETWORK SECURITY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Differentiate between passive and active attacks.

2. What is confidentiality in network security?

3. Specify the block size and key size of DES.

4. Name any two AES transformation functions.

5. What is meant by pseudorandom number generation?

6. What is modular arithmetic?

7. State the requirements of message authentication.

8. Identify the role of private key in digital signatures.

9. State the purpose of web security protocols.

10. What is electronic mail security?

PART B – (5 × 5 = 25 marks)

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

11. (a) Analyze the role of encryption in network security.

Or

(b) Differentiate between security services and security mechanisms.

12. (a) Explain the working of DES encryption algorithm.

Or

(b) Mention the needs for AES.

13. (a) Illustrate the key generation process in RSA.

Or

(b) Explain the ElGamal cryptographic system.

14. (a) Compare MACs and digital signatures.

Or

(b) Explain the ElGamal Digital Signature Scheme.

15. (a) Give an overview of IP Security.

Or

(b) Describe the role of SSL in web security.

PART C – (3 × 10 = 30 marks)

Answer any THREE questions

16. Demonstrate the symmetric cipher model with a neat diagram.

17. Explain the block cipher design principles with suitable examples.

18. Illustrate the Elliptic Curve Cryptography (ECC) and its advantages.

19. Describe MACs based on hash functions and block ciphers in detail.

20. Discuss web security considerations and explain common web security threats.

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	34132

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
MAY 2026

Third 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. Why we go for cloud computing?

2. List any two benefits of cloud computing.

3. What is meant by centralized email communication?

4. Mention the need of group project collaboration.

5. What is project management software?

6. Comment on cloud storage.

7. What is Google App Engine?

8. What is Windows Azure Platform?

9. What is meant by virtual infrastructure?

10. Define Storage Area Network.

PART B — (5 × 5 = 25 marks)

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

11. (a) State the advantages and disadvantages of cloud computing.

Or

(b) Classify the types of cloud service development.

12. (a) Describe how cloud computing helps in collaborating on schedules.

Or

(b) Explain community-level collaboration using cloud services.

13. (a) List the features of online calendar applications.

Or

(b) Examine the role of online databases in collaboration.

14. (a) Explain the classification of cloud implementation models.

Or

(b) Differentiate between SaaS and PaaS.

15. (a) Define virtualization and explain its benefits.

Or

(b) Interpret the concept of virtualized data centre.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the history of cloud computing and describe how cloud computing works.

17. Analyze the role of cloud computing in collaborating to-do lists and schedules.

18. Discuss online planning and task management tools and their importance in collaboration.

19. Examine the role of VMware and vCloud in cloud infrastructure.

20. Define hypervisors. Discuss hypervisor management software with examples.

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D–2468

Sub. Code
34133

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
MAY 2026.

Third Semester

WEB TECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Define HTML.

2. What is meant by inline style?

3. Comment on DHTML.

4. Mention the use of <*script*> tag in HTML.

5. What do you understand by XML namespace?

6. State the purpose of XML versions.

7. Servlets are preferred over CGI. Why?

8. List out the components involved in servlet processing.

9. Differentiate between JSP and servlet.

10. What is Apache Tomcat?

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the basic structure of an HTML document with suitable tags.

Or

(b) Describe various types of lists in HTML with an examples.

12. (a) Write a brief note on event handling mechanism in JavaScript.

Or

(b) Discuss about different types of operators in JavaScript with an example.

13. (a) Illustrate the various DOM levels in detail.

Or

(b) Outline the working principles of the SAX parser.

14. (a) Differentiate between client-side caching and server-side caching.

Or

(b) How information is retrieved from the client using servlets? Analyze.

15. (a) Describe the HTTP request/response model with a neat diagram.

Or

(b) Explain servlet basics related to JSP technology.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain about tables in HTML with an example program.

17. Describe data validation techniques using JavaScript with an example.

18. Illustrate the architecture of AJAX and evaluate its importance in dynamic web applications.

19. Write a detailed note on servlet life cycle with a neat diagram.

20. Compare JSP and servlets with suitable example.

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D–2469

Sub. Code
34141

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
MAY 2026.

Fourth Semester

DATA MINING AND WAREHOUSING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. List any two OLAP operations.

2. Mention any two hardware requirements of data warehouse.

3. What is meant by data quality?

4. What is data enrichment?

5. Define support and confidence.

6. What is decision tree?

7. What is K-medoids clustering?

8. Comment on genetic algorithm.

9. Identify the use of RapidMiner.

10. What is temporal data mining?

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Classify the different types of warehouse schemas with example.

Or

(b) Write short notes on data warehousing in industry.

12. (a) Discuss current trends in data mining.

Or

(b) Analyze the role of data visualization in data mining.

13. (a) Explain Bayesian classification and its working principle.

Or

(b) Examine the methods used to discover association rules.

14. (a) Interpret the working of a neural network.

Or

(b) Differentiate between supervised and unsupervised learning.

15. (a) Interpret the concept of knowledge mining.

Or

(b) Write short notes on WEKA.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss data warehousing in government sector with a case study.

17. Analyze the data preprocessing techniques and their importance.

18. Describe the FP-tree growth algorithm and explain its advantages over Apriori.

19. Illustrate the hierarchical clustering methods with examples.

20. Classify the various types of web mining with suitable example.

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D–2470

Sub. Code
34142

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
MAY 2026.

Fourth Semester

MOBILE APPLICATION DEVELOPMENT

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Define mobile operating system.

2. Differentiate between mobile applications and mobile services.

3. What is mobile website?

4. List out any two examples of native application categories.

5. How wireframe is different from a finished interface?

6. Name any two fundamental elements of mobile design.

7. Expand J2ME SDK.

8. Comment on J2ME Wireless Toolkit.

9. State Android SDK.

10. What is Microsoft Windows Phone?

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the components of the mobile ecosystem with a neat description.

Or

(b) Write a brief note on the role of mobile services in enhancing user experience.

12. (a) Describe the categories of mobile device profiles with an example.

Or

(b) Differentiate between mobile websites and native applications.

13. (a) Illustrate the concept of wireframes and state their importance in detail.

Or

(b) Explain the major components that influence mobile design quality.

14. (a) Demonstrate the stages involved in the MIDlet life cycle.

Or

(b) How J2ME Wireless Toolkit assists in testing and deployment? Discuss.

15. (a) Explain Eclipse IDE and its importance in Android development.

Or

(b) Discuss about the working of Android Emulator and AVD.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. With a suitable diagram, explain end-to-end mobile application ecosystem in detail.

17. Explain games, utility application, and location-based services with an example.

18. Examine the principles and elements involved in effective mobile design.

19. Describe the components and operation of the J2ME run-time system.

20. Compare various mobile project frameworks such as Android, iOS, BlackBerry, Symbian, and Windows Phone.

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D–2471	Sub. Code
	34143

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, MAY 2026.

Fourth Semester

Computer Science

ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

(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 approaches to AI.

2. What is heuristic function?

3. What is an inference rule?

4. List the steps in the knowledge engineering process.

5. What is an expert system shell?

6. Mention two applications of expert systems.

7. Define initial state and goal state.

8. What is symbolic spatial relationship?

9. Comment on object recognition.

10. Mention two robotic applications of machine vision.

PART B — (5 × 5 = 25 marks)

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

11. (a) Demonstrate the structure of problem-solving agent.

Or

(b) Compare uninformed and informed search strategies.

12. (a) Explain inference methods in propositional logic.

Or

(b) Illustrate the structure and components of Bayesian Networks.

13. (a) Describe the knowledge acquisition process in Expert Systems.

Or

(b) List out the characteristic features of Expert Systems.

14. (a) Discuss path selection strategies in AI search.

Or

(b) Describe Means-End Analysis in solving robotic problems.

15. (a) Explain the functions of a vision system.

Or

(b) Interpret the segmentation techniques with examples.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Interpret the concept of Artificial Intelligence and its various approaches.

17. Describe procedural knowledge and compare it with declarative knowledge.

18. Summarize the various components of an Expert System with neat diagram.

19. Elaborate note on Monkey and Banana problem using state space representation.

20. Explain A/D conversion, quantization and encoding in image processing.

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