D–1524	Sub. Code
	34111

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

First Semester

Computer Science

DESIGN AND ANALYSIS OF ALGORITHMS

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is the use of pseudocode?

2. How to choose a better algorithm for a particular problem?

3. What do you mean by empirical analysis of algorithms?

4. Which sorting is best in data structure and why?

5. Define 0/1 knapsack.

6. Write the concept of greedy techniques.

7. Define heap.

8. What is the use of DFS and BFS?

9. Define spanning tree.

10. Define strongly connected components.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What are the factors for analyzing the algorithms and describe any one of them?

Or

(b) Write short notes on notion of algorithms.

12. (a) What is recursion? Explain analysis of recursive algorithm with example.

Or

(b) Describe about binary search with example.

13. (a) How to compute binomial coefficients? Explain with example.

Or

(b) Illustrate the working of prim's algorithm.

14. (a) How does Breadth first search algorithm work? Explain.

Or

(b) Write the algorithm for Insertion sort and explain with example.

15. (a) Write short notes on graph coloring concept.

Or

(b) Explain assignment problem with example.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain any two important problem types for design and analysis of algorithms.

17. Describe the concept of divide and conquer with example.

18. What is binary tree? Explain the binary search tree algorithm with example.

19. Explain Heap Sort technique with example.

20. Explain spanning tree with example.

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D–1525	Sub. Code
	34112

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

First Semester

Computer Science

APPLIED MATHEMATICS FOR COMPUTER SCIENCE

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is an atomic statement?
2. Define Biconditional connective.
3. State Universal and Existential quantifiers
4. What are free variables in predicate logic?
5. What do you mean by degree of a vertex in a graph?
6. Draw a complete binary tree of 4 levels.
7. Define Slack variable.
8. Write the standard form of LPP in matrix form.
9. What is an optimal solution of a transportation problem?
10. What is an unbalanced assignment problem?

PART B — (5 × 5 = 25 marks)

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

11. (a) Construct a truth table for the statement $(P \to Q) \leftrightarrow (\neg Q \to \neg P)$

Or

(b) Prove the following implication

$(q \to (p \wedge \neg P)) \to (r \to (P \wedge \neg P)) \Rightarrow (r \to q)$

12. (a) Show that $R \to S$ can be derived from the premises $P \to (Q \to S), IR \vee P$ and Q.

Or

(b) Prove that

$\forall \times (P(x) \to (Q(y) \wedge R(x))), \exists X$

$P(x) \Rightarrow Q(y) \wedge \exists x(P(x) \wedge R(x))$

13. (a) What is a graph? Explain briefly various types of graphs.

Or

(b) What is a spanning tree? Explain the prim's algorithm for constructing spanning tree

14. (a) What are the characteristics and limitations of Linear Programming Problem? Explain.

Or

(b) Solve the following LPP using graphical method.

Minimum $z = x_1 - 3x_2$

Subject to the constraints

$x_1 + x_2 \le 300$

$x_1 - 2x_2 \le 200$

$2x_1 + x_2 \ge 100$

$x_2 \ge 200$ *and*

$x_1, x_2 \ge 0$

15. (a) Find basic feasible solution by North West Corner rule.

	D_1	D_2	D_3	D_4	Supply
O_1	2	3	4	5	40
O_2	3	2	3	4	50
O_3	4	3	3	4	60
O_4	6	4	4	5	70
Demand	65	55	55	45	

Or

(b) Solve the following assignment problem represented by the following cost matrix. Find the minimal total cost.

Machines

Job	A	B	C	D	F
1	13	8	16	18	19
2	9	15	24	9	12
3	12	9	4	4	4
4	6	12	10	8	13
5	15	17	18	12	20

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Define tautology. Check whether the following statement is a tautology or contradiction.
$(P \vee Q) \wedge (\neg P \vee R) \rightarrow (Q \vee R)$

17. Determine the PDNF and PCNF for the following statement $p \vee (\neg P \rightarrow (q \vee (\neg q \rightarrow)))$.

18. How graphs are represented? Explain various methods with example.

19. Use Two phase Simplex method to solve the following LPP.

Minimize $z = 3x_1 + 2x_1$

Subject to the constraints

$x_1 + x_2 \geq 5$

$2x_1 + x_2 \geq 6$

$7x_1 + 2x_2 \geq 14$ *and*

$x_1, x_2 \geq 0$.

20. Find the optimal solution to the transportation problem for which the cost, origin availability and destination requirements are given below:

		Destination				
Origin		1	2	3	4	Supply
	A	7	2	5	5	30
	B	4	4	6	5	15
	C	5	3	3	2	10
	D	4	-1	4	2	20
Demand		20	25	15	15	

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	34113

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

First Semester

Computer Science

ADVANCED JAVA PROGRAMMING

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is meant by JDBC driver?
2. Define SQL Exception.
3. State about client-side programming.
4. Specify the Interfaces used for creating RMI.
5. Define JAR File.
6. What are design patterns?
7. Specify the function of cookies.
8. Point out the use of HTTP methods.
9. Mention about Icons and Labels.
10. Differentiate Jcombo box and Jlist in Java.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the concept of JDBC programming.

Or

(b) Write a Java program to convert lower case string to upper case.

12. (a) Distinguish between TCP and UDP.

Or

(b) Illustrate about marshalling and unmarshalling in RMI.

13. (a) How to develop a Simple Bean using the BDK? Discuss.

Or

(b) Write notes on property editors and its various types.

14. (a) List the differences between servlet context and page context.

Or

(b) Explain the implementation of Session Tracking.

15. (a) How Swing components differed from AWT components? Describe with examples.

Or

(b) Write an applet program using each of the following graphics methods.

(i) drawoval()

(ii) drawrect()

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Write a Java program for preparing employee details using JDBC,

17. Write notes on different types of sockets and its applications.

18. Discuss about Events and methods.

19. Write a servelet program that accepts two input string using <param> tag and concatenate the strings and display it in status window.

20. Create swing applet that has two buttons named "Alpha" and "Beta" with different colors. When either of the buttons pressed, it should display "Alpha Pressed" or "Beta Pressed" in different colors.

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34121

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Second Semester

Computer Science

COMPUTER SYSTEM ARCHITECTURE

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define Computer Architecture.
2. State Amdahl's Law.
3. What do you mean by data Hazards?
4. What is loop unrolling?
5. What is distributed shared memory?
6. What is multi processor cache coherence?
7. Define virtual machine.
8. What is shadow page table?
9. Define throughput.
10. What do you mean by Network attached Storage?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What are the various classes of parallelism? Explain.

Or

(b) Explain various data streams available as a component of the multiprocessor.

12. (a) Describe the ILP approaches and Memory System.

Or

(b) Write short note on Data dependencies and Hazards.

13. (a) Explain the Distributed shared memory Architectures.

Or

(b) Evaluate the model of memory consistency.

14. (a) What is DRAM Technology? Explain.

Or

(b) Discuss the features of memory technology and optimizations.

15. (a) Write short notes on disk army.

Or

(b) Describe the functions of Internet Archive cluster.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Narrate the concepts of Dependability and classes of computer.

17. Elucidate the way to exploit ILP using dynamic Scheduling.

18. Explain in detail about the architecture of Symmetric shared memory.

19. What are the advanced optimization of cache performance? Explain.

20. Discuss in detail about the little queuing Theory.

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	34122

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Second Semester

Computer Science

DISTRIBUTED OPERATING SYSTEMS

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is distributed operating system?
2. Differentiate LAN and WAN.
3. Point out the use of buffering.
4. Write about failure handling.
5. Define Granularity.
6. What is mutual exclusion?
7. Mention the use of file modes.
8. State about file replication.
9. What is passive attack?
10. How does public key differs from private key?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Enumerate the advantages and disadvantages of distributed operating system.

Or

(b) Discuss about the communication protocols.

12. (a) Explain the role of Encoding and Decoding process in message passing.

Or

(b) Write notes on group communication.

13. (a) Describe about structure of shared memory consistency models.

Or

(b) Illustrate clock synchronization in distributed system.

14. (a) What are file accessing models? Explain.

Or

(b) What do you mean by atomic transaction? Explain.

15. (a) Classify the security challenges faced by the distributed systems.

Or

(b) Write short notes on Digital Signatures.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss about the concept of ATM networks in detail.

17. Explain the following terms

    (a) Multi datagram messages

    (b) Process addressing

18. How the deadlock is handled in distributed system? Elucidate.

19. Explain the distributed file system and implementation issues.

20. Describe the role of cryptography in managing confidentiality and authentication.

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D–1529

Sub. Code
34123

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

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. How Garbage collector used in .Net?
2. Define Common Type System.
3. What is TRACE in VB.Net?
4. Write the difference between label and link label.
5. Write down the usage of global.asax file.
6. Differentiate between option button and check box.
7. Define overriding.
8. What is abstraction?
9. Which namespace are required to enable the use of database in ASP.NET?
10. What are the benefits of ADO.NET?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write the key features of CLR.

Or

(b) Draw the architecture of .NET framework.

12. (a) How exceptions are handled in VB.net? Explain.

Or

(b) Explain data types used in VB. NET.

13. (a) Discuss any five methods of rich text box.

Or

(b) Explain logging and error handling in ASP.NET.

14. (a) What is encapsulation? Give suitable program.

Or

(b) Write short notes on inheritance.

15. (a) Differentiate between ADO.NET dataset and an ADO Record set.

Or

(b) Explain the functions of repeater with example.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain briefly about IDE in Visual Studio.

17. Explain conditional and looping statements in VB.Net.

18. How do you create a Windows application using Windows controls?. Explain.

19. Compare and contrast Overloading and Overriding with example.

20. Discuss in detail about HTML server controls in ASP.NET.

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D–1530

Sub. Code
34131

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Third Semester

Computer Science

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. Define CIA in Network Security.
2. Distinguish between public key and private key in cryptography.
3. What is Cryptanalysis?
4. What do you mean by Block Ciphers?
5. What is mean by Key Exchange in Cryptography?
6. Define Asymmetric Key Cryptosystem.
7. What are MAC based Ciphers?
8. Define Message Authentication Codes.
9. List down the types of Security mechanism for Email.
10. Define IP Security.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What are Security Services and mechanisms? Explain.

Or

(b) Explain any one Classical Encryption Technique and its advantages.

12. (a) Elucidate the working of DES with suitable example.

Or

(b) Write the advantages and limitations of AES.

13. (a) Describe in detail about the public key Cryptosystems.

Or

(b) How will the Elgamel Algorithm Works? Explain with example.

14. (a) Explain MAC based Hash Functions.

Or

(b) Elucidate in detail about the Digital Signature Standard.

15. (a) Describe in brief about the Pretty Good Privacy

Or

(b) Describe the security mechanism for Socket Layer.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail about the Symmetric Cipher model and Substitution techniques with suitable example.

17. Elucidate the Differential and Linear Cryptanalysis with proper illustration.

18. Describe in detail the RSA algorithm with suitable example.

19. Explain in detail with proper illustration, Schnorr Digital Signature Scheme.

20. Write detailed note on IP security policy and encapsulating the Payload.

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D–1531

Sub. Code
34132

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Third Semester

Computer Science

CLOUD COMPUTING

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define cloud computing.

2. What are the essential characteristics of cloud computing?

3. How contacts are managed efficiently using cloud computing?

4. How cloud reduces the communication barriers?

5. Write the features of online scheduling applications.

6. Define task management.

7. What is virtual machine?

8. List the benefits of Paas.

9. What is Hypervisor?

10. Define Logical partitioning.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What are the pros and cons of cloud computing? Explain.

Or

(b) Discuss the three cloud service models in detail.

12. (a) How a collaborated household budget is created using cloud?

Or

(b) Write short note on communication across community.

13. (a) Describe about online planning in cloud service.

Or

(b) What is contact management in cloud computing? Explain.

14. (a) How Google AppEngine help us in business?

Or

(b) Describe about features of IaaS

15. (a) What is virtualization? Explain the benefits virtualization.

Or

(b) Write about storage area networks.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the various types of cloud service development.

17. Discuss the features of collaboration on schedules using cloud.

18. Narrate the steps involved in storing and sharing file using cloud services.

19. What is Microsoft Live? Elucidate how it works?

20. Explain in detail about cloud server virtualization.

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	34133

DISTANCE EDUCATION

M.Sc. (CS) DEGREE EXAMINATION, DECEMBER 2021.

Third Semester

WEB TECHNOLOGY

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is HTML?
2. What are the two methods of implementing style sheets?
3. Define cookies.
4. State the use of Rollover buttons.
5. What is meant by XML namespace?
6. Write the purpose of XPATH.
7. Define servlet.
8. What do you mean by client side caching.
9. What is the structure of HTTP Request Message?
10. What is page Directive?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short notes on WWW.

Or

(b) What are the types of lists supported by HTML and explain them in detail

12. (a) Explain how functions can be written in Java script with an example.

Or

(b) List and explain some of the built-in objects of JavaScript?

13. (a) Briefly explain the importance of Document Object Model.

Or

(b) What is AJAX? Write its advantages.

14. (a) What are the functions of doGeto and doPost() methods?

Or

(b) Write short notes on HTTP servlet.

15. (a) Give the advantages of using JSP for server side programming.

Or

(b) What are JSP scripting components? Explain.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. (a) Explain the table tag in HTML with example.

(b) What are the features of style sheets? Explain.

17. Show in detail about the operators and string manipulations in Java Script with example code.

18. What are the various levels of DOM? Explain each of them.

19. Explain the servlet life cycle with an example.

20. Describe the procedure to set up JSP environment.

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D–1533

Sub. Code
34141

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Fourth Semester

Computer Science

DATA MINING AND WAREHOUSING

(CBCS 2018 – 19 Academic Year Onwards)

Time : 3 hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. State the two characteristics of data warehouse.
2. Expand OLTP.
3. List the application areas of data mining.
4. Mention about types of data.
5. Specify the role of Association rule.
6. Define dynamic Item set algorithm.
7. State the use of decision tree classification.
8. What is machine learning?
9. What is web content mining?
10. Define text mining.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe OLAP operations with necessary diagram and example.

Or

(b) Discuss about data Transformation.

12. (a) What are the data cleaning techniques? Explain briefly.

Or

(b) Explain about measures of similarity and dissimilarity.

13. (a) Discuss in detail about FP tree growth algorithm.

Or

(b) Describe about Classification by Back Propagation.

14. (a) What are partitioning algorithms? Explain.

Or

(b) Explain briefly different types of data in cluster analysis.

15. (a) Explain the different forms of knowledge

Or

(b) What are the features of Matlab tool? Describe.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. List various components of data warehouse. Describe their functionality in detail.

17. State the need of dimensionality reduction. Elucidate any two techniques for dimensionality reduction.

18. Illustrate about Bayesian classification algorithm.

19. (a) Write about K-means clustering algorithm

    (b) What are the key issue in hierarchical clustering algorithm? Explain.

20. Write short notes on:

    (a) Web structure mining

    (b) Applications of weka tool

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D–1534

Sub. Code
34142

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2021.

Fourth Semester

Computer Science

MOBILE APPLICATION DEVELOPMENT

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define Mobile Application.
2. List down the various networks for Mobile Applications.
3. What do you mean by. Location based services?
4. Define Enterprise Applications.
5. What are Wireframes?
6. List down Mobile application design tools.
7. Define Run time Environment.
8. Write the features of J2ME SDK.
9. Define Eclipse.
10. Differentiate Apple IOS and Symbian OS.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What are the advantages and Disadvantages for Mobile Application?

Or

(b) Explain briefly the services offered by the Mobile Application Framework.

12. (a) What are Mobile Web Widgets? Explain with example.

Or

(b) Write short notes on Native Applications..

13. (a) Explain the Click Stream Architecture.

Or

(b) Describe in detail about elements used for Mobile design

14. (a) What are J2ME Wireless Toolkits? Explain.

Or

(b) Elucidate in detail about MIDlet Programming.

15. (a) Describe in brief about the Android Application Development.

Or

(b) Write short notes on Microsoft Windows Phone.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail about the Mobile Eco system.

17. Explain various design patterns for developing a mobile application.

18. Describe in detail on Mobile Interpreting Design.

19. Explain the J2ME Architecture for Mobile app Development.

20. What are the various Operating Systems for Mobile Applications? Discuss.

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D–1535

Sub. Code
34143

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
DECEMBER 2021.

Fourth Semester

ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

(CBCS 2018 – 19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define the concept of Artificial intelligence.

2. List various search strategies.

3. What are the Relational and Procedural Languages?

4. What is Learning in Knowledge engineering process?

5. What are the features of Expert Systems?

6. Define Knowledge Acquisition.

7. What do you mean by Obstacle Avoidance in Robot Task planning?

8. Define Robot Learning.

9. What are Imaging Devices?

10. Define Feature Extraction.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short notes on Forward and Backward Reasoning.

Or

(b) Discuss briefly about problem solving Agents.

12. (a) Explain briefly about the Inference Rules and Methods.

Or

(b) What is Pattern Recognition? Explain the applications of Pattern Recognition

13. (a) Describe the components of an Expert System.

Or

(b) Explain any one Knowledge Acquisition method with an application.

14. (a) Write short notes on AND - OR Graph Analysis.

Or

(b) Explain in detail about Symbolic Spatial Relationships.

15. (a) Describe in brief about the Quantization.

Or

(b) Write short notes on Object Recognition.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the Searching Strategies with suitable example.

17. Elucidate in detail on Bayesian Network with suitable application example and neat architecture.

18. Describe the Rule based System Architecture using the domain knowledge.

19. Explain in detail with proper illustration, Robot learning process.

20. Write a detailed note on Image data Reduction.

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