D–7530	Sub. Code
	34111

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
DECEMBER 2022.

First Semester

DESIGN AND ANALYSIS OF ALGORITHMS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is the purpose of an algorithm?

2. What is pseudo code?

3. Define Debugging.

4. What do you mean by non-recursive algorithm?

5. What is coefficient?

6. What is called minimum spanning Tree?

7. Define digraph.

8. What is presorting?

9. Define Hamiltonian cycle.

10. What is called Graph coloring?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write the steps to develp algorithm for problem solving methods.

Or

(b) Describe about space complexity and time complexity of an algorithm.

12. (a) What is Fibonacci series? Write and algorithm to generate Fibonacci series.

Or

(b) Explain the bubble sort algorithm with an example.

13. (a) What is Huffman code? How will you find optimal Huffman code? Explain.

Or

(b) Explain the Prim's Algorithm to build minimal spanning tree.

14. (a) Describe insertion sort with an example.

Or

(b) What is reduction? Explain the reduction method to solve problems.

15. (a) Discuss the features of branch and bound problem.

Or

(b) Briefly Explain the algorithm for Knapsack. Problem.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail about Asymptotic notations used to measure the algorithms efficiency.

17. Write and explain the Quick Sort algorithm with example.

18. Illustrate the Floyd-Warshall's algorithm for solving the all pairs shortest paths problem.

19. Explain in detail about the Depth First Search Traversal.

20. Describe 8-queen problem and write algorithm to solve 8 queen problem.

———————

D–7531	Sub. Code
	34112

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION, DECEMBER 2022.

First Semester

APPLIED MATHEMATICS FOR COMPUTER SCIENCE

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Find the truth table for the statement $P \leftrightarrow \neg Q$

2. Write the following statement in symbolic form

   If either Sam drinks Coffee or Ram drinks Tea then Salim drinks Milk.

3. What is Conjunctive Normal Form?

4. What are quantifiers?

5. What is spanning tree? Give example.

6. When two graphs are said to be isomorphic?

7. Define slack variable.

8. What is Linear programming problem?

9. List the approaches used in transportation problem to determine the initial basic feasible solution.

10. What is an optimality condition for assignment problem?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions. Choosing either (a) or (b).

11. (a) Construct the truth table for $(P \to Q) \wedge (Q \to P)$.

Or

(b) Show that the formula $Q \vee (P \wedge \neg Q) \vee (\neg P \wedge \neg Q)$ is a tautology.

12. (a) Find the disjunctive normal form of $\neg(P \vee Q) \leftrightarrow (P \wedge Q)$

Or

(b) Show that the following implication without constructing truth table

$$(Q \to (P \wedge \neg P)) \to (R \to (P \wedge \neg P)) \Rightarrow (R \to Q)$$

13. (a) Explain the following with example: (i) in-degree and out degree of a vertex (ii) Path (iii) Circuit (iv) Complete graph.

Or

(b) What is minimum spanning tree? Explain any one algorithm for constructing minimum spanning tree.

14. (a) Find the solution using graphical method

Max $Z = 3x_1 + 5x_2$

$x_1 + 2x_2 \le 2000$

$x_1 + 2x_2 \le 1500$

$x_2 \le 600$ and $x_1, x_2 \ge 0$

Or

(b) Explain the mathematical form of LPP.

15. (a) A computer centre has three expert programmers. The centre wants thee application programmes to be developed. The head of the computer centre, after carefully studying the programmes to be developed, estimates the computer time in minutes required by the experts for the application programmes as follows:

		Programmers		
Programmes	1	120	100	80
	2	80	90	110
	3	110	140	120

Assign the programmers to the programmes in such a way that the total computer time is minimum.

Or

(b) Obtain the initial solution to bellow Transportation Problem using least cost method.

	A	B	C	D	Supply
I	6	3	5	4	22
II	5	9	2	7	15
III	5	7	8	6	8
Demand	7	12	17	9	

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Obtain the PCNF and PDNF for $P \to \left((P \to Q) \wedge \neg\left(\neg Q \vee \neg P\right)\right)$

17. (a) What are rules of inference? Explain.

(b) Show that

$$\forall x(P(x)) \to Q(x)) \wedge \forall x(Q(x)) \to R(x)) \Rightarrow \forall x(P(x)) \to R(x))$$

18. How graphs are represented in memory? Explain various matrix representations of graphs.

19. Use the simplex method to solve the following LP problem.

Maximize $Z = 3x_1 + 5x_2 + 4x_3$

Subject to the constraints
$$2x_1 + 3x_2 \leq 8$$
$$2x_2 + 5x_3 \leq 10$$
$$3x_1 + 2x_2 + 4x_3 \leq 15 \text{ and}$$
$$x_1, x_2, x_3 \geq 0$$

20. Obtain the initial solution to above TP using Vogel's approximation method.

	D1	D2	D3	D4	Supply
O1	2	3	11	7	6
O2	1	0	6	1	1
O3	5	8	15	10	10
Demand	7	5	3	2	17

———————

D–7532	Sub. Code
	34113

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2022.

First Semester

Computer Science

ADVANCED JAVA PROGRAMMING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define the term JDBC.

2. What do you mean by SQL?

3. What is the purpose of Inet Address?

4. Define Datagrams.

5. What is the purpose of JAR files?

6. List down the Constrained Properties.

7. Define HTTP Servlet.

8. What do you mean by Session Tracking?

9. Define JApplet.

10. What are AWT Classes?

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Describe the Meta Data function with suitable illustration.

Or

(b) How will you create Statement and Result set in Java? Explain.

12. (a) Explain briefly about the TCP/IP Server Sockets with neat Sketch.

Or

(b) Write Short notes on Datagrams with suitable illustration.

13. (a) Elucidate on Events and Methods with proper example.

Or

(b) Describe in detail about Persistence.

14. (a) Write short notes on Life Cycle of a Servlet.

Or

(b) Describe the Cookies Service with suitable illustration.

15. (a) Explain the role of Tables and Panes in JApplet.

Or

(b) Write short notes on AWT Classes.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain in detail about the JDBC Architecture with neat Sketch.

17. Elucidate with proper example the Client/ Server Applications using the RMI.

18. Describe in detail on the Storing and sharing of JAR Files with suitable example.

19. What are Servlet Parameters? Explain with example.

20. Describe in detail on JApplet Classes with neat Sketch.

———————

D–7533	Sub. Code
	34121

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2022.

Second Semester

Computer Science

COMPUTER SYSTEM ARCHITECTURE

(CBCS 2018 –19 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is meant by micro architecture?

2. State the formula for calculating the cost of integrated circuits

3. Define the role of compiler.

4. What is multiprocessing?

5. Differentiate local node and home node.

6. Mention about spinlocks.

7. Point out the use of TLB.

8. What is meant by garbage collection?

9. Define throughput of the system.

10. Specify the role of I/O system.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Elucidate about RISC architecture and its advantages and disadvantages.

Or

(b) Distinguish between latency and bandwidth.

12. (a) Explain about static scheduling.

Or

(b) Write notes on hardware and software speculation.

13. (a) Describe about multithreading.

Or

(b) Explain about crosscutting issues in synchronization.

14. (a) Illustrate about direct mapping process.

Or

(b) What are virtual machines? Explain its advantages.

15. (a) Write notes on advances in disk storage.

Or

(b) Illustrate about internet archive cluster.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain how the pipeline architecture is used to improve the performance of the system.

17. Discuss about four major concepts to implement the Tomasulo algorithm.

18. Write notes on Distributed Shared Memory Architectures.

19. Describe the Static RAM and Dynamic RAM memory technology.

20. Illustrate about transaction processing benchmarks.

———————

D–7534	Sub. Code
	34122

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2022.

Second Semester

Computer Science

DISTRIBUTED OPERATING SYSTEM

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define process.
2. What is meant by reliability of the system?
3. Mention about buffering.
4. State about group addressing.
5. What is Granularity?
6. What is clock drift?
7. List the file attributes.
8. What is hierarchical structure?
9. Define passive attack.
10. Denote the role of virus programs.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Illustrate about evolution of distributed operating system.

Or

(b) Explain about ISO protocol.

12. (a) Describe the significance of Encoding and Decoding process in communication system.

Or

(b) Elucidate about internal and external synchronization of Physical clocks.

13. (a) Write a note on replacement strategy in DSM.

Or

(b) Explain about Berkley's clock synchronization algorithm in distributed system.

14. (a) Illustrate about characteristics of distributed file system.

Or

(b) Elucidate about atomic transaction.

15. (a) Discuss about potential attacks to computer system.

Or

(b) Write notes on role of Digital Signatures.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe about different types of network topology.

17. Discuss about failure handling in message passing.

18. Elucidate about Bully algorithm.

19. Write a note on desirable features of distributed file system.

20. Explain how cryptography provides confidentiality and authentication.

———————

D–7535	Sub. Code
	34123

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
DECEMBER 2022.

Second Semester

.NET PROGRAMMING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is intellisense?

2. Mention the use of CLR.

3. Write any 4 type checking functions in vb net.

4. What is “with” statement?

5. Define MDI with important properties.

6. Define Tracing.

7. What is abstraction?

8. What is connection Timeout?

9. Write 5 validation controls.

10. List out the namespace in ado.net class hierarchy.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) What are assemblies in VB.Net? Describe.

Or

(b) What are the features of .NET? Explain.

12. (a) What is an exception? Write the syntax of the two types with suitable code.

Or

(b) Discuss the looping statements in VB.net.

13. (a) Explain view state and session state with example.

Or

(b) Discuss about AJAX controls.

14. (a) Write short notes on inheritance.

Or

(b) What is encapsulation? Give an example.

15. (a) Distinguish between ado.net data set and an ado record set.

Or

(b) Explain data list controls with example.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss about the .net components.

17. Compare and contrast the list controls and rich text box controls.

18. Explain any two HTML server controls.

19. How to implement forms authentication? Give example.

20. How can you create data table? Give suitable example.

———————

D–7536	Sub. Code
	34131

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2022.

Third Semester

Computer Science

CRYPTOGRAPHY AND NETWORK SECURITY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are the three key objectives of computer security?

2. State the difference between substitution and transposition techniques.

3. What do you mean by Avalance Effect?

4. List out any two critical aspects of block cipher design.

5. What are asymmetric keys?

6. How to overcome men in middle attack?

7. What is digital signature?

8. What is the use of brute-force attack?

9. Name the services offered by SSL.

10. Write the three functional areas of IP security.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Discuss the concepts of computer security.

Or

(b) How does play fair cipher works?

12. (a) Explain the operations involved in DES key generation.

Or

(b) Discuss mix columns transformation of AES.

13. (a) How to encrypt plaintext using public key algorithm?

Or

(b) How does PRNG based RSA algorithm works?

14. (a) Explain message authentication functions.

Or

(b) Write short notes on standard of Digital signature.

15. (a) Compare TLS with SSL protocols.

Or

(b) Describe IP security architecture.

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

Answer any THREE questions.

16. Explain categories of security services in networks.

17. How does Fiestal cipher algorithm (16 rounds) works?

18. Discuss Diffie-Hellman Key Exchange algorithm.

19. Illustrate the operations of HMAC algorithm.

20. Explain in detail — SSL protocol.

———————

D–7537	Sub. Code
	34132

DISTANCE EDUCATION

M.Sc. DEGREE EXAMINATION, DECEMBER 2022.

Third Semester

Computer Science

CLOUD COMPUTING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define the term Cloud Computing.

2. List the advantages of Cloud Computing?

3. What is the purpose of Cloud Contact Lists?

4. How to collaborate on Group Projects?

5. What is the purpose of Online Cloud Calendar Application?

6. How the Online File Sharing done in Google Cloud?

7. Define Software-As-A- Service.

8. What do you mean by Google App Engine?

9. Define Cloud Virtualization.

10. What is the Purpose of Hypervisor Management Software?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the Pros and Cons of Cloud Computing paradigm.

Or

(b) Classify the various Cloud Computing deployment Models with neat Sketch.

12. (a) How will the Hybrid Cloud Services Collaborate?

Or

(b) Write Short notes on Collaborating on Schedules.

13. (a) Elucidate the Project Management in Cloud Computing.

Or

(b) Describe in detail about Word Processing and Database.

14. (a) Write short notes on Amazon Web Services.

Or

(b) Describe the Infrastructure — as — a- Service with suitable illustration

15. (a) Describe in brief about the Server Virtualization for Cloud.

Or

(b) Describe the Way, how Logical Partitioning works in Cloud Governance.

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

Answer any THREE questions.

16. Explain in detail about the Architecture of Cloud Computing with neat Sketch.

17. What are the various ways to Collaborating on Group Projects and Events? Explain in detail.

18. Describe in detail on the Storing and sharing of Files via Online with suitable example.

19. Explain in detail with proper illustration, the Windows Azure Platform for Cloud Implementation.

20. Recommend the planning strategies for Hypervisor Management using Virtualization in Cloud.

———————

D–7538	Sub. Code
	34133

DISTANCE EDUCATION

M.Sc. (CS) DEGREE EXAMINATION, DECEMBER 2022.

Third Semester

Computer Science

WEB TECHNOLOGY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL questions.

1. Define Internet.
2. Differentiate HTML and XML.
3. State the use of JavaScript.
4. Denote the function of Rollover buttons.
5. Define intrinsic event handling.
6. What is AJAX?
7. Mention the role of Java Servlets.
8. Differentiate static web page and dynamic web page
9. State the use of JSP tag library.
10. What is MVC paradigm?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Discuss the importance of hyperlinks.

Or

(b) Explain about ordered and unordered lists with examples.

12. (a) Elucidate various types of cookies in JavaScript.

Or

(b) What is data validation? Explain.

13. (a) Illustrate about Document Object Model.

Or

(b) Write a XML program to represent book details as web data.

14. (a) Write notes on Power of Servlets.

Or

(b) Explain about INT and DESTROY methods in Servlets.

15. (a) Illustrate about the anatomy of a JSP page.

Or

(b) Describe the architecture of MVC in JSP with example.

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

Answer any THREE questions.

16. Design a web page for wild animals Using HTML tags and forms.

17. Explain about handling of events in Java Script with examples.

18. Illustrate in detail about XPATH.

19. Discuss about the client side caching and server side caching.

20. Describe the steps involved in installing Tomcat.

———————

D–7539	Sub. Code
	34141

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
DECEMBER 2022.

Fourth Semester

DATA MINING AND WARE HOUSING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is Data Mining?

2. What is snow flake schema?

3. What are the techniques are used in data mining?

4. Define Data preprocessing.

5. What are the difference between support and confidence?

6. Define back propagation.

7. What is meant by CLARA?

8. What is Clustering?

9. What is meant by web usage mining?

10. Define knowledge mining.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Illustrate Architecture of Data warehousing. Briefly explain.

Or

(b) Explain about warehousing software.

12. (a) Briefly explain Data Mining techniques.

Or

(b) What do you meant by data quality? Describe.

13. (a) What is partitioning? Explain partitioning algorithm.

Or

(b) Exemplify Bayesian Classification Algorithm.

14. (a) Differentiate between hierarchical vs partitioning algorithm.

Or

(b) Write a note on supervised machine learning algorithm.

15. (a) Describe about web content mining and web structure mining.

Or

(b) Write a note on rapidminer and matlab.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Illustrate warehouse schema in detail.

17. Describe various types of data in data mining.

18. Explain about FP-Tree growth algorithm.

19. Exemplify K-medoid algorithm.

20. How the weka tool is processing? Explain in detail.

———————

D–7540	Sub. Code
	34142

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
DECEMBER 2022.

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 questions.

1. What is Mobile Ecosystem?

2. Define Operating System.

3. Mention Types of Mobile Application Medium.

4. What is meant by SMS?

5. Define Site Maps.

6. List out the elements of Mobile Design.

7. Differentiate between J2ME and J2SE.

8. What is KVM?

9. What is meant by Google Android?

10. Define Emulator.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL the questions, Choosing Either (a) Or (b).

11. (a) List out the Mobile Operator and explain briefly.

Or

(b) What are the mobile devices are available in Mobile Ecosystem? Explain.

12. (a) Briefly explain about Mobile Web Widgets.

Or

(b) Discuss about Informative Apps.

13. (a) What is Prototype? Discuss in detail.

Or

(b) Write short notes on Interpreting Design.

14. (a) How J2ME is organized? Explain.

Or

(b) What is MIDlet suite? Explain the MIDlet lifecycle in detail.

15. (a) Describe about Development Framework of Android.

Or

(b) Write a note on Samsung Bada and Nokia Symbian.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Illustrate the application frameworks of the mobile ecosystem in detail.

17. Describe in detail about Location Based Services.

18. Explain about Mobile Design Tools in detail.

19. Exemplify MIDlet Programming.

20. Discuss in detail about Android Application Development.

———————

D–7541	Sub. Code
	34143

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
DECEMBER 2022.

Fourth Semester

ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. List the Application areas of Artificial Intelligence.

2. Define Genetic Algorithm.

3. What is the purpose of Knowledge representation in AI?

4. What do you mean by Inference Rules?

5. What are the characteristics of an Expert System?

6. Define Rule based System.

7. What is known as State Space Search?

8. List down the phases in Task Planning.

9. Define Lighting.

10. What are the application areas of Machine Vision?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the Concept of Artificial Intelligence.

Or

(b) Explain the Local Search Algorithm with neat Sketch.

12. (a) How will the propositional Logic Works? Explain in brief with suitable example.

Or

(b) Write Short notes on Pattern Recognition.

13. (a) Elucidate the Rule based System Architecture with neat sketch.

Or

(b) Describe in detail about Expert System Applications.

14. (a) Explain the Mean End analysis in Robotic Problem.

Or

(b) Describe Robot Task Planning with suitable illustration.

15. (a) Describe in brief about Imaging Devices.

Or

(b) Write short notes on Feature Extraction.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail about the Architecture of Search Strategies with neat Sketch.

17. Describe in detail on Bayesian Network for Knowledge Representation with proper illustration.

18. Describe in detail on Knowledge Acquisition strategy with suitable example.

19. Explain in detail with proper illustration, the Robot Learning Phase.

20. What are the Segmentation Techniques? Explain with neat Sketch.

———————