D–5527	Sub. Code
	34111

DISTANCE EDUCATION

M.Sc.(COMPUTER SCIENCE) DEGREE EXAMINATION,
MAY 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 an algorithm?

2. What do you mean by space complexity?

3. Define profiling.

4. What is a recursion function?

5. What is an optimal binary search tree?

6. What is Huffman code?

7. Write activities in decrease and conquer strategy.

8. Mention the applications of graph.

9. Define state space graph.

10. What is called assignment problem?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the basic characteristics of an algorithm.

Or

(b) What are the parameters used to find the efficiency of an algorithm?

12. (a) Explain the selection sort algorithm with an example.

Or

(b) What is binary search? Write and explain the algorithm for binary search.

13. (a) Narrate the concepts of Warshall's algorithm.

Or

(b) Explain the Dijkstra's algorithm to find the shortest path for the given graph.

14. (a) Write short notes on depth first search.

Or

(b) Describe the features of presorting.

15. (a) Explain briefly the subset sum problem with example.

Or

(b) How graphs are represented in memory? Explain.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Discuss the Asymptotic notations used to measure the efficiency of algorithms.

17. Narrate the concepts in Strassens Matrix multiplication.

18. Illustrate and explain in detail about optimal binary search tree.

19. What is heap? Explain the heap sort algorithm with example.

20. Explain the branch and bound search methods with example.

———————

D–5528	Sub. Code
	34112

DISTANCE EDUCATION

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

First Semester

APPLIED MATHEMATICS FOR COMPUTER SCIENCE

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Let X and Y represent the statements "Radha likes Tea" and "Radha likes Coffee". Write the statement Radha likes Tea but not Coffee in the symbolic form.

2. What is contradiction?

3. Define disjunctive normal form.

4. What is Universal quantifier?

5. When two graphs are said to be isomorphic to each other?

6. Define binary tree.

7. What is an artificial variable?

8. What do you mean by a dual of a LPP problem?

9. State optimality test in a transportation problem.

10. What is an assignment problem?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What are connectives? Explain.

Or

(b) What is tautology? Show that $\left(\neg q \wedge (p \to q)\right) \to \neg p$ is a tautology.

12. (a) Determine the conjunctive normal form of the following

$p \wedge (p \to q) \Leftrightarrow p \wedge \left(\neg p \vee q\right)$.

Or

(b) Explain the P, T and CP rules of inference and Inference rules for generalization and specification.

13. (a) Explain the following:

(i) Pendant vertex (ii) Cycle (iii) Walk (iv) Connected graph (v) Path matrix.

Or

(b) What is a tree? Explain briefly the tree traversal methods.

14. (a) A company manufactures two types of products P1, P2. Each product uses lathe and Milling machine. The processing time per unit of P1 on the lathe is 5 hours and on the milling machine is 4 hours. The processing time per unit of P2 on the lathe is 10 hours and on the milling machine, 4 hours. The maximum number of hours available per week on the lathe and the milling machine are 60 hours and 40 hours, respectively. Also the profit per unit of selling P1 and P2 are Rs.6.00 and Rs. 8.00, respectively. Create a linear programming model to determine the production volume of each of the products such that the total profit is maximized.

Or

(b) Solve the LPP using graphical method.

Maximize $z = 5x_1 + 7x_2$

Subject to the constraints

$$x_1 + x_2 \leq 4$$
$$3x_1 + 8x_2 \leq 24$$
$$10x_1 + 7x_2 \leq 35$$

and $x_1, x_2 \geq 0$.

15. (a) Write the steps involved for solving Transportation problem using Vogel's Approximation method.

Or

(b) Solve the following assignment problem.

	I	II	III	IV	V
A	10	5	9	18	11
B	13	19	6	12	14
C	3	2	4	4	5
D	18	9	12	17	15
E	11	6	14	19	10

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Prove the following implication $(p \vee q) \wedge (p \to r) \wedge (q \to r) \Rightarrow r$.

17. Obtain the principal conjunctive and disjunctive normal forms of the formula $(\neg p \to r) \wedge (q \leftrightarrow p)$.

18. What is a graph? How graphs are represented? Explain various methods with example.

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

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

Subject to the constraints

$$2x_1 + x_2 - 6x_3 = 20,$$
$$6x_1 + 5x_2 + 10x_3 \leq 76,$$
$$8x_1 - 3x_2 + 6x_3 \leq 50,$$
$$x_1, x_2, x_3 \geq 0.$$

20. Solve the following transportation problem to minimize the total transportation cost for shifting goods from factories (A,B,C) to warehouses (P,Q and R) where unit transportation cost, availability and demand at factories and warehouses respectively are given in the following matrix:

Find the optimal solution of the following transportation problem. Use North west corner rule to find the initial basic feasible solution.

		Warehouse			Availability
		P	Q	R	
Factory	A	2	2	3	10
	B	4	1	2	15
	C	1	3	1	40
Demand		20	15	30	65

———————

D–5529	Sub. Code
	34113

DISTANCE EDUCATION

M.Sc.,(COMPUTER SCIENCE) DEGREE EXAMINATION,
MAY 2022.

First Semester

ADVANCED JAVA PROGRAMMING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. Define result set.

2. What do you mean by Meta data function?

3. List the varied types of network Topologies.

4. What are the various layers in the TCP/IP reference model?

5. Write the different features of java beans.

6. Define bean persistence.

7. What do you mean by Http request and response?

8. What are cookies?

9. Define applets.

10. List out various GUI component classes in AWT.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain in brief on JDBC - ODBC bridge.

Or

(b) Summarize the components of SQL exception with suitable example.

12. (a) Illustrate the TCP/IP server sockets with neat architecture.

Or

(b) What are the data grams? Explain.

13. (a) Explain the events and methods handling in design patterns.

Or

(b) Demonstrate with suitable example about java beans customization.

14. (a) Write short notes on the life cycle of Servlets with suitable illustration.

Or

(b) Interpret with example, session tracking.

15. (a) Explain in brief about working of tables in AWT containers.

Or

(b) List the procedures to implement graphics in AWT classes with proper illustration.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Explain in detail, on Java data base connectivity with MySQL with suitable example.

17. Elucidate the procedure to display source code of a web page by URL connection class.

18. Compare and contrast various design patterns in Java with appropriate examples.

19. Explain in detail on generic servlets methods and functions in java.

20. Discuss in detail about event handling in JApplet.

———————

D–5530	Sub. Code
	34121

DISTANCE EDUCATION

M.Sc. (COMPUTER SCIENCE) DEGREE EXAMINATION,
MAY 2022.

Second Semester

COMPUTER SYSTEM ARCHITECTURE

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions

1. Define instruction set architecture.

2. What is semantic gap?

3. Specify about instruction level parallelism.

4. Define data hazards.

5. Point out the use of threads.

6. What is meant by Synchronization?

7. Mention the advantage of memory interleaving.

8. State the three types of nodes.

9. Define cache memory.

10. What is logical unit number?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain about service level agreements.

Or

(b) Write notes on various factors for measuring performance of computer system.

12. (a) Describe about reducing branch cost.

Or

(b) What is dynamic scheduling? Illustrate.

13. (a) Discuss about score board and its various stages.

Or

(b) Explain in detail the symmetric shared memory architecture.

14. (a) Discuss associative mapping process with example.

Or

(b) Elucidate about protection of virtual memory.

15. (a) Write notes on real faults and failures.

Or

(b) Describe about different types of storage devices with diagrams.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Explain about trends in computer architecture technology with suitable diagrams.

17. Describe about various modes of multithreading with examples.

18. Elucidate in detail about Flynn's classification of parallel computer architecture with neat diagram.

19. Illustrate about direct memory access with diagrams.

20. Discuss in detail about little queuing theory.

———————

D–5531	Sub. Code
	34122

DISTANCE EDUCATION

M.Sc. (COMPUTER SCIENCE) DEGREE EXAMINATION,
MAY 2022.

Second Semester

DISTRIBUTED OPERATING SYSTEM

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. Define monolithic kernel.

2. Specify the types of networks.

3. What is inter process communication?

4. Differentiae encoding and decoding process.

5. Define thrashing.

6. What is meant by mutual exclusion?

7. Mention the use of Lamport's algorithm.

8. Define file model.

9. What is meant by file replication?

10. State about logic bombs.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the models of distributed operating system.

Or

(b) Write a note on advantages of micro kernel system.

12. (a) Discuss about internal and external synchronization of physical clocks.

Or

(b) Explain about importance of group communication.

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

Or

(b) Discuss about election algorithm.

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

Or

(b) Write a note on attributes of Fault-tolerant systems.

15. (a) Explain the role of authentication in security system.

Or

(b) Describe the protection mechanism and access control.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Illustrate about the concept of distributed operating systems.

17. Write a detailed note on group communication.

18. Explain the design and implementation issues in DSM.

19. How atomic transactions are implemented? Discuss.

20. What are security attacks? Describe.

———————

D–5532	Sub. Code
	34123

DISTANCE EDUCATION

M.SC. (COMPUTER SCIENCE) DEGREE EXAMINATION,
MAY 2022.

Second Semester

.NET PROGRAMMING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. What is .NET strategy?

2. Distinguish between overloading and overriding.

3. What is an operator? Write all operators in vb.net.

4. What is exception handling?

5. What are the usage of global.asax file?

6. Define custom controls?

7. What is class?Write one example.

8. Write down the usage of repeater.

9. Write down the benefits of ADO.NET?

10. Mention the two types of ASP.NET data binding.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What are the features of CLR? Explain.

Or

(b) Explain the terms abstraction, encapsulation, inheritance and polymorphism.

12. (a) Distinguish between sub procedure and function with suitable program.

Or

(b) What are the data types vb.net? Explain.

13. (a) Explain various file types in Asp.net

Or

(b) Discuss about error handling in ASP.net

14. (a) Describe about windows authentication.

Or

(b) Discuss about state management in Asp.net

15. (a) Discuss the features of data grid and Ado.net

Or

(b) Describe about data objects in Ado.net

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Explain all the looping statements in vb.net with suitable code.

17. Write a program and design the form to find simple and compound interest using label, button, text box controls and dialogue box.

18. Discuss in detail about HTML server controls in asp.net

19. Explain how to build forms with web server controls in asp.net

20. Write a detailed note on data management with ado.net

———————

D–5533	Sub. Code
	34131

DISTANCE EDUCATION

M.SC.(COMPUTER SCIENCE) DEGREE EXAMINATION, MAY 2022.

Third Semester

CRYPTOGRAPHY AND SECURITY NETWORK

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. What are the goals of computer security?

2. Distinguish between symmetric and asymmetric cryptography.

3. What is stream cipher?

4. List the three critical aspects of block cipher design.

5. What is public key cryptography?

6. What is a primitive root?

7. What is MAC?

8. State the properties of digital signature.

9. What are the services provided by SSL record protocol for SSL connections?

10. Mention the operations involved in PGP.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain different types of security attacks.

Or

(b) What are transposition ciphers? Explain.

12. (a) Write short notes on fiestel cipher structure.

Or

(b) Explain the design criteria for S box of DES.

13. (a) What is Man-in-the-middle attack? Explain.

Or

(b) Write short notes on Elliptic curve cryptography.

14. (a) Explain the requirements for MAC functions.

Or

(b) What is HMAC? Explain.

15. (a) Explain secure socket protocol stack.

Or

(b) What are the components of a message? Explain.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. What are the categories of security services? Discuss.

17. Explain in detail about AES transformation functions.

18. Describe the RSA algorithm.

19. Discuss about digital signature standard.

20. What is IP security? Explain its architecture.

———————

D–5534	Sub. Code
	34132

DISTANCE EDUCATION

M.Sc. (COMPUTER SCIENCE) DEGREE EXAMINATION, MAY 2022.

Third Semester

CLOUD COMPUTING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. List the components of cloud computing.
2. What are the benefits of migrating to cloud computing?
3. What do you mean by 'Virtual communities' in cloud?
4. How will the cloud services collaborate on To-do lists?
5. What types of calendars can you create with Google calendar?
6. Define contact management in cloud.
7. Define SaaS.
8. What do you mean by cloud computing platforms?
9. Define server virtualization.
10. What are the web-based storage virtualizations available in cloud?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe cloud architecture in brief with neat sketch.

Or

(b) Write short notes on the history of cloud computing.

12. (a) How will the cloud services collaborate on centralizing E-mail communication?

Or

(b) Write short notes cloud computing for corporation.

13. (a) Analyze the working procedure for collaborating on word processing using cloud with suitable illustration.

Or

(b) What are the online storing and sharing applications available in the cloud computing? Explain briefly.

14. (a) Explain the working procedure Vmware VCloud with neat sketch.

Or

(b) Write short notes platform as a service in cloud environment.

15. (a) Summarize various benefits of cloud virtualization.

Or

(b) Describe in detail, the use of virtualized data center.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. What is cloud computing? Explain various deployment models of cloud computing.

17. Elucidate the centralization of E-mail communication using the cloud with suitable application example.

18. Describe the use of cloud storage and evaluating online file-storage and sharing services.

19. Discuss in detail, about Google App engine.

20. What are the virtual infrastructure requirements? Elaborate.

———————

D–5535	Sub. Code
	34133

DISTANCE EDUCATION

M.SC. (COMPUTER SCIENCE) DEGREE EXAMINATION,
MAY 2022.

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. What is XHTML?

2. Define style sheets.

3. Denote the use of prompt window.

4. State the function of Rollover Buttons.

5. List the hardware requirements for web server.

6. What is meant by document tree?

7. Why servlet is better than CGI?

8. Differentiate static web page and dynamic web page.

9. What is the use of JSP?

10. Point out the purpose of Tomcat.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Enumerate the applications of web technology.

Or

(b) Explain the usage and importance of frame tag in HTML.

12. (a) Describe various types of cookies in Java Script with example.

Or

(b) How to move images using java script? Discuss.

13. (a) Write notes on document object model event handling in detail.

Or

(b) Describe about XSLT and XPATH.

14. (a) Write a program to create a class 'STUDENT' with the following specifications NAME, GENDER, DATE OF BIRTH, ADDRESS, CONTACT NUMBER AND E-MAIL-ID using Java Servlets.

Or

(b) Explain life cycle of Servlet in Java.

15. (a) Write short notes on the anatomy of a JSP page.

Or

(b) How JSP is better than servlet technology? Explain.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Elucidate about tables and formatting tags in HTML.

17. How validations performed in Java script? Explain with suitable example.

18. Write a java script code to display the text 'WEB TECHNOLOGY' with increasing font size in the interval of 100ms in green color, when the font size reached 50 pt it should stop.

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

20. Explain different types of directives in JSP.

———————

D–5536	Sub. Code
	34141

DISTANCE EDUCATION

M.Sc. (Computer Science) DEGREE EXAMINATION,
MAY 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 the questions

1. What is OLAP?

2. State the two types of logical extraction method.

3. What is meant by knowledge?

4. List the types of data.

5. What is classification?

6. State pincher search algorithm.

7. Define CLARANS algorithm.

8. What is machine learning?

9. What is spatial mining?

10. Mention the use of rapidminer tool.

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the architecture of data warehousing with neat diagram.

Or

(b) Write short note on the role of data warehousing in IT.

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

Or

(b) What is data visualization? Elucidate.

13. (a) Describe the methods to discover association rule.

Or

(b) Explain about classification by back propagation.

14. (a) Explain the DBSCAN clustering algorithm.

Or

(b) Write short notes on genetic algorithm.

15. (a) What is temporal mining? Explain.

Or

(b) Summarize the features of WEKA tool.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Illustrate about data warehouse hardware, operating system and software.

17. Describe any two techniques for dimensionality reduction.

18. Explain about Apriori algorithm with an example.

19. Describe in detail about categorical clustering algorithm.

20. Elucidate web structure mining and web usage mining.

———————

D–5537	Sub. Code
	34142

DISTANCE EDUCATION

M.SC. (Computer Science) DEGREE EXAMINATION,
MAY 2022.

Fourth Semester

MOBILE APPLICATION DEVELOPMENT

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions

1. Define application framework for mobile apps.
2. List down various services offered by mobile applications.
3. What do you mean by mobile web widgets?
4. Define informative applications.
5. What are wire frames?
6. What are click streams in mobile application designing?
7. Define run time environment.
8. How will the J2ME SDK works?
9. Define android AVD.
10. Differentiate Apple IOS and Symbian OS.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain various operating systems for mobile applications.

Or

(b) What are the services offered by the mobile application framework? Explain.

12. (a) Explain briefly about the mobile web widgets.

Or

(b) What are native applications? Explain.

13. (a) Describe the click stream architecture.

Or

(b) What are the elements used for mobile design? Explain.

14. (a) Write short notes on J2ME architecture for mobile app development.

Or

(b) What is MIDlet programming? Elucidate.

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. Elucidate various categories of mobile widgets with examples.

18. Describe in detail on mobile interpreting design.

19. Explain with proper illustration, the working of J2ME wireless toolkit.

20. Discuss various operating systems used for mobile application development.

———————

D–5538	Sub. Code
	34143

DISTANCE EDUCATION

M.SC.(COMPUTER SCIENCE) DEGREE EXAMINATION,
MAY 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. What are the components of a problem?

2. Define Baye's rule.

3. What are inference rules?

4. What are different types of learning?

5. List the application areas of expert systems?

6. What is expert system shell? Write its use.

7. Define the terms state and state space.

8. What is means ends analysis?

9. Write the objectives of a computer vision system.

10. What are imaging devices?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) How will you evaluate the performance of problem solving algorithm?

Or

(b) What is an agent? Explain the function of problem solving agent.

12. (a) What do you mean by induction learning? Explain.

Or

(b) Explain different performance Characteristics of learning methods.

13. (a) What are the features and capabilities should be considered while evaluating knowledge system building tools? Explain.

Or

(b) Explain various levels of expert system technology.

14. (a) Explain the algorithm for means end analysis?

Or

(b) What is robot learning? Explain briefly adaptive control techniques.

15. (a) What is lighting? Explain various lightings in a vision system.

Or

(b) Describe different types of low level features.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions

16. Explain the Hill climbing algorithm with example.

17. Describe the steps involved in pattern recognition process?

18. Explain the components of a typical expert system with neat diagram.

19. What are the phases in Robot task planning? Explain.

20. What is object recognition? Explain different object recognition approaches and factors to be considered for complexity of object recognition.

———————