D–2230

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

First Semester

DIGITAL COMPUTER ORGANISATION

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   Define Karnaugh Map.

2.   How many types of number systems are there?

3.   What is combinational circuit with example?

4.   Specify the uses of BCD counter.

5.   What is meant by instruction?

6.   What is Bus? Draw the single bus structure.

7.   Define Addressing modes.

8.   What is Register?

9.   State the characteristics of RAM.

10.   Mention the uses of cache memory.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) State and explain De-Morgan's theorems in detail.

Or

(b) Convert the following Hexadecimal numbers into Binary

(i) DCF

(ii) 1FB

12. (a) What is Encoder? Give the functional logic of Encoder.

Or

(b) Construct the Logic diagram of JK flip-flop with the truth table.

13. (a) What are the registers used in a computer? Explicate its functions.

Or

(b) Draw the design of accumulator logic with neat diagram.

14. (a) What are the different types of addressing Modes? Summarize them.

Or

(b) Write a short note on DMA and IOP.

15. (a) What is auxiliary memory? Explain its types.

Or

(b) Demonstrate the concepts of virtual memory.

2 **D–2230**

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Simplify using K-Map $Y(A,B,C,D) = \Sigma m(0,5,8,10,13,14,15) + \Sigma d\,(11,12)$. Implement the result with logical circuit.

17. Critically evaluate the functions of any two Flip flops.

18. Elaborate memory reference instructions cycle in detail.

19. Examine the four types of instruction formats with examples.

20. Describe the memory hierarchy with neat diagram.

————————————

D–2230

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

First Semester

OBJECT ORIENTED PROGRAMMING AND C++

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   What is C++?

2.   Enlist the formatted console I/O operations.

3.   Define Class.

4.   Write the use of friend function.

5.   What is Polymorphism?

6.   How to create an abstract class?

7.   Draw the structure of class template.

8.   How to open and close a file in C++.

9.   State any two exceptions.

10.   Write the purposes of throw and catch mechanism.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Describe the evolution of Object-Oriented languages.

Or

(b) Write the differences between C and C++.

12. (a) Differentiate Call-by-value and Call-by-reference with suitable program.

Or

(b) Write a C++ program to implement Copy Constructor.

13. (a) How do you create virtual function? Explain with an example.

Or

(b) Write a C++ program to overload the unary minus operator.

14. (a) Elaborate the concepts of function template with multiple arguments.

Or

(b) Describe the hierarchy of file stream classes with neat diagram.

15. (a) How to handle the exceptions in C++? Narrate its mechanisms.

Or

(b) Explicate the role of constructors and destructors in handling exceptions.

D–2231

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Describe the features of Object-Oriented Programming.

17. How to create dynamic objects? Explicate with an example.

18. Write a C++ program to overload the binary operators using friend function.

19. Give a brief account on Class template with multiple arguments.

20. Why do we need exception handling? How to implement exception handing in C++?

————————————

D–2232		Sub. Code
		31513

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

First Semester

DATA STRUCTURES AND ALGORITHMS.

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Mention the primitive data types.

2. Define Algorithms.

3. Write the applications of Stack.

4. List out the operations on Linked List.

5. Define trees.

6. What are the operations can be performed on binary tree?

7. What is searching?

8. Compare linear and binary search.

9. Why Sorting algorithms are important?

10. What are advantages of Bubble Sort?

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write short note on the characteristics of an Array.

Or

(b) Write short note on the types of data structure.

12. (a) Discuss about decision tree classification.

Or

(b) Write short note on doubly linked list and single linked list.

13. (a) Explain the different types of binary trees.

Or

(b) What do you mean by Hashing? Discuss it.

14. (a) What are the applications of searching technique?

Or

(b) Write short notes on linear search and its advantages.

15. (a) How would you optimize Bubble Sort?

Or

(b) Illustrate with an example the insertion sort.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Discuss in detail the time and space complexity of the algorithms.

17. Enumerate the various operations on Queue and Circular Queue.

D–2232

18. Write a brief note on different binary tree traversing with an example.

19. Illustrate with an example, the binary search and its advantages.

20. Explain how tree Sort works, give an example.

————————

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

First Semester

DISCRETE MATHEMATICS

(CBCS 2020-21 Academic year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   Define Predicate.

2.   Construct the truth table of $(P \wedge Q) \to P$.

3.   Give an example of relation which is symmetric but neither reflexive nor anti symmetric nor transitive.

4.   Define poset.

5.   What is Relation?

6.   Let f and g be functions from R to R defined by $f(x) = ax + b$, $g(x) = 1 - x + x^2$.   If $(g \circ f) = 9x^2 - 9x + 3$, determine a, b.

7.   Define sub group.

8.   What is Isomorphism?

9. State Simple Graph.

10. Define Isolated Vertex.

PART B — (5 × 5 = 25 marks)

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

11. (a) Find PCNF without constructing truth table $(P \rightarrow (Q \wedge R)) \rightarrow (\sim P \rightarrow (\sim Q \wedge \sim R))$.

Or

(b) Obtain Conjuctive Normal Form of $((P \rightarrow Q) \wedge \sim Q) \rightarrow \sim P$.

12. (a) Show that the relation $R = \{(a, a), (a, b), (b, a), (b, b), (c, c)\}$ on $A = \{A, b, c\}$ is an equivalence relation and find A/R also find partitions of A.

Or

(b) Prove that the relation R defined by "a is congruent to b modulo m" on the set of integers in an equivalent relation.

13. (a) Let $F : R \rightarrow R, g : R \rightarrow R$, where R is the set of real numbers be given by $f(x) = x^2 - 2$ and $g(x) = x + 4$ find f ∘ g and g∘f. State whether these functions are bijective or not.

Or

(b) Define the following :

(i) recursive function

(ii) total function

(iii) partial function.

2

D–2248

14. (a) State and prove Lagrange's Theorem.

Or

(b) Let R be a group of all real numbers under addition and R + be a group of all positive real numbers under multiplication. Show that the mapping $f : R \to R+$ defined by $f(x) = 2x$ for all $x \in R$ is an isomorphism.

15. (a) What is a probability that an integer selected at random from the set {1, 2, ...100} is divisible by either 2 or 5?

Or

(b) Suppose that in a group of 5 people: A, B, C, D and E, the following pairs of people are acquainted with each other

- A and C
- A and D
- B and C
- C and D
- C and E

(i) Draw a graph G to represent this situation.

(ii) List the vertex set, and the edge set, using set notation. In other words, show sets V and E for the vertices an edges, respectively, in $G = \{V, E\}$.
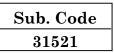
(iii) Draw an adjacency matrix for G.

D–2248

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Prove that for any three propositions P, Q, R the compound propositions $(P \to (Q \to R)) \to ((P \to Q) \to (P \to R))$ is a tautology by

    (a) with truth table

    (b) with laws of logic

17. Let $X = \{1, 2, 3, 4, 5\}$ and relation $R = \{(x, y)/x > y\}$. Draw the graph of 'R' and also give its matrix.

18. Find the inverse of the function $f(x) = e^\wedge x$ defined from R to R+.

19. Consider the groups (G₁, *) and (G₂, ⊕) with identify elements e₁ and e₂ respectively. If f : $G_1 \to G_2$ is a group homomorphism, then prove that

    (a) $f(e_1) = e_2$

    (b) $f(a^{-1}) = [f(a)]^{-1}$

    (c) If H₁ is a sub group of G₁ and $H_2 = f(H_1)$, then H₂ is a sub group of G₂.

    (d) If f is an isomoprhism from G₁ onto G₂, then f⁻¹ is an isomorphism from G₂ onto G₁.

20. Explain the bayes theorem with necessary example.

——————————

4

D–2248

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

Second Semester

ACCOUNTING AND FINANCIAL MANAGEMENT

(CBCS 2020-21 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   State the limitations of recording transactions in the Journal.

2.   What do you mean by Practical system or English system of book keeping?

3.   Classify the types of errors.

4.   Define the term Ledger.

5.   What is a debit note?

6.   Write any two advantages of Petty Cash Book.

7.   What is a purchase returns book?

8.   Who is a labor?

9.   Define production budget.

10. What is meant by equity sources of capital?

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Explain the different types of accounting and objectives of accounting.

Or

(b) Define the following :

(i) Transaction

(ii) Journal

(iii) Ledger

(iv) Debtor.

12. (a) What is a Profit and Loss Account? Write its format neatly.

Or

(b) Write journal to rectify the errors in the following entries.

(i) Cash Sales for Rs. 30,000/- was completely omitted.

(ii) Purchase from Arun & co cash Rs. 400/- was not credited to cash a/c. However purchase a/c was debited correctly.

(iii) Sales book is overcast by Rs. 500/-

(iv) Purchase book is undercast by Rs. 1,000/-

2 **D–2249**

13. (a) Enter the following transactions in the purchase book of Arun Kumar :

2004 May

May 1   Bought from Mr. 'A' 10 boxes of Nirma soap @ Rs. 150 per box @ discount of 20%.

     8   Purchased from Mr. 'B' 5 boxes of Vim detergent powder Rs. 60 per box, for cash.

     10   Received from Mr. 'C' 120 pieces of sandal wood soap @ Rs. 8 per piece, less discount 20%.

     15   Purchased furniture from Mr. 'D' Rs. 5,548.

     18   Received invoice from Mr. 'E' for 15 cases of "Wash bar" @ Rs. 180 per box.

          12 cases of washing powder Rs. 60 per cake. Forwarding charges Rs. 20 less 25% discount

     30   Purchased office stationery from Mr. 'A' Rs. 180.

Or

(b) Define cost sheet. Explain its scope and advantages.

14. (a) Prepare Profit and loss a/c for the following Trial Balance of Narayana Rao & Co, on 31.12.2007.

Account	Debit Rs.	Credit Rs.
Purchases	1,00,000	
Wages	6,000	
Rent	2,400	
Travelling expenses	4,800	

3

D–2249

Account	Debit Rs.	Credit Rs.
Interest	1,200	
Returns inward	4,000	
Bank	10,000	
Cash	34,000	
Machinery	14,000	
Furniture	1,000	
Loan		45,800
Miscellaneous expenses	200	
Returns outward		3,000
Salaries	12,000	
Insurance	800	
Discount	900	
Sales		99,900
Sundry creditors		50,000
Capital		1,10,000
Drawings	15,000	
Advertisements	2,400	
Buildings	10,000	
Sundry debtors	80,000	
Stock (1-1-2007)	10,000	
	3,08,700	3,08,700

Or

(b) Explain the zero budgeting in detail.

D–2249

15. (a) Explain : Dividend of cost.

Or

(b) Write and explain the types of cost of capital.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Journalize the following transactions and prepare a trial balance : Rex commenced business with a capital of Rs. 1,00,000. Purchased furniture for Rs. 5,000. Paid Rent for Rs. 2,000. Sold goods for Rs. 25,000. Purchased for Rs. 20,000. Sold goods to Thomas on credit Rs. 10,000. Paid Electricity charges Rs. 3,000.

17. The following are the balances extracted from the books of Mr. Mathew as on 31.3.2011.

	Rs.
Capital	15,000
Drawings	4,800
Machinery	20,000
Furniture	1,500
Sundry debtors	20,000
Sundry creditors	13,000
Interest (Dr)	1,250
Wages	10,000
Salaries	7,500
Carriage inwards	500
Purchase returns	1,000
Sales returns	1,500
Loans borrowed	20,000

5

D–2249

	Rs.
Stock (1.4.2008)	7,500
Purchases	60,000
Sales	90,000
Office rent	1,100
Insurance	240
Discount allowed	1,000
Discount earned	500
General expenses	1,200
Cash on hand	150
Bank balance	1,260

Adjustments :

(a) Stock on 31.3.2011   10,000

(b) Rent outstanding   100

(c) Salaries outstanding   900

(d) Insurance prepaid   40

(e) Interest on loans outstanding   250

(f) Provide depreciation 10% on Machinery, 6% on furniture.

Pass necessary adjusting entries and prepare Trading and Profit and Loss account for the year ended 31.3.2011 and a balance sheet as at the closing date.

18. Write a detailed account on variance analysis.

19. Explain the objectives and functions of Financial Management in detail.

20. Write a short note Budgetary Control.

―――――

6

D–2249

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

Second Semester

RELATIONAL DATABASE MANAGEMENT SYSTEMS
(RDBMS)

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define the term DBMS.

2. What is a weak entity?

3. How primary key constraints and foreign key constraints are expressed in SQL?

4. List out the set operations.

5. What are null values?

6. Mention the problems caused by redundancy.

7. What are ACID properties?

8. What is shadow paging?

9. What is the relationship between files and indexes?

10. Write the SQL command for index creation.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) What are data models? Explain.

Or

(b) Write short notes on database languages.

12. (a) What is a view? How do views support logical data independence?

Or

(b) Describe the division operation in terms of the basic relational algebra operations.

13. (a) Illustrate the aggregate operators in SQL.

Or

(b) Discuss about lossless join decomposition.

14. (a) Discuss on validation based protocols.

Or

(b) Brief on advance recovery systems.

15. (a) Write short notes on clustered index.

Or

(b) Differentiate between ISAM and B+ tree indexes.

D–2234

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain about ER model design constructs with illustrations

17. Describe Tuple relational and Domain relational calculus.

18. Explain 1NF, 2NF, 3NF and BCNF.

19. Discuss in detail about serializability.

20. Explain in detail about index data structures.

———————————

D–2235		Sub. Code
		31523

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

Second Semester

COMPUTER GRAPHICS

(CBCS 2018/2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   What is computer output?

2.   What is frame buffer?

3.   What are the types of transformation Label it?

4.   What is cohen sutherland algorithm used for?

5.   Write the importance of Illumination.

6.   Mention three properties of lights.

7.   List out the limitations of 3D technology.

8.   Write any two types of Oblique projections.

9.   What is motion design? Write its features.

10. How many forms of animation are there?

PART B — (5 × 5 = 25 marks)

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

11. (a) Discuss in brief about any two types of Image scanner.

Or

(b) Explain in brief about Boundary fill algorithm.

12. (a) What is 2D transformations? Discuss in brief with its structure.

Or

(b) Write a brief note on Sutherland – Hodgeman polygon clipping algorithm.

13. (a) Elaborate in brief about 3D display methods.

Or

(b) Describe the use of Surface rendering methods in computer Graphics.

14. (a) Explain in brief about Rotation and Scaling operations in 3D.

Or

(b) Write a brief note on the Purpose of View volume.

15. (a) Write down the steps involved in Designing animation sequence with a neat diagram.

Or

(b) Discuss in brief about different computer Animation languages with its uses.

2

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain in detail about Raster scan and Random scan methods with its working techniques and architecture.

17. Explain in detail about cyrus-beck line clipping algorithm with a neat structure.

18. What are different types of curves? List out the properties of any one curve.

19. Explain in detail about parallel projection with a diagrammatic representation.

20. Elaborate in detail about Painter's algorithm with its working procedure.

————————

D–2250	Sub. Code
	31524

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

Second Semester

VISUAL PROGRAMMING WITH .NET

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   What is the Information side of visual studio?

2.   Define programming language.

3.   What is inheritance?

4.   Define Namespace.

5.   What is an interface?

6.   What are the three types of output?

7.   Define application state.

8.   Define foreign key.

9.   What is layout?

10. What is WPF?

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Distinguish Solution explorer with Status bar.

Or

(b) Write a short note on visual studio.

12. (a) What is code editor in visual studio? Explain with suitable example.

Or

(b) Distinguish passing parameter with returning data.

13. (a) How do you implement an interface? Explain with example.

Or

(b) Differentiate class designer visualization and class designer code generation.

14. (a) Explain the following in detail

(i) The immediate window and

(ii) Watch window to view application state.

Or

(b) How do you configure database options? Explain with example.

15. (a) Explain the layouts stackpanel and dockpanelin detail.

Or

(b) Write short notes on Model View Controller.

2 **D–2250**

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. List and explain the various position of Windows in visual studio in detail.

17. Explain the various Branching statements are used in ASP.Net with suitable example.

18. Create a web application for student information using ASP.Net controls.

19. Explain the following with example

    (i)   Creating database and

    (ii) Adding table

20. Briefly explain the Data Grid control with suitable example.

————————————

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is Software Engineering?

2. Write the uses of process framework.

3. What are the steps involved in software requirements engineering process?

4. What is data modeling?

5. Define Software Quality.

6. Specify the purpose of creating software architecture.

7. What do you mean by software testing?

8. List out the product metrics.

9. How to mitigate project risks?

10. Define Software Reliability.

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe the process framework in detail.

Or

(b) Elaborate the concepts of personal and team process model.

12. (a) What are the tasks involved in Requirement Engineering? Explain them.

Or

(b) How to build the analysis model? Explicate with the data model concepts.

13. (a) Illustrate the various software design concepts.

Or

(b) Illuminate the various architectural styles and patterns.

14. (a) What are the test strategies for Object–Oriented Software? Explicate them.

Or

(b) Write down the metrics for analysis model.

15. (a) Explicate the various software risks in detail.

Or

(b) Write a short note on ISO 9000 quality standards.

2 **D–2251**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss any two process models in detail.

17. Give explanation for Scenario-based modeling and Class-based modeling.

18. Elaborate the steps involved in user interface analysis and design.

19. Discuss about

    (a) Validation Testing

    (b) Block Box Testing

    (c) White Box Testing.

20. Give a brief account on Risk Protection and Refinement.

————————

D–2251

DISTANCE EDUCATION

M.C.A./M.C.A.(Lateral Entry) DEGREE EXAMINATION, DECEMBER 2023.

Third Semester

OPERATING SYSTEM

(CBCS 2018/2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   Define Shell.

2.   Mention the objective of OS design.

3.   What is spinlock?

4.   What is cache coherence?

5.   What is Deadlock in OS?

6.   How does monitor differ from semaphore?

7.   Define Static and dynamic linking.

8.   Which memory allocation is faster?

9.   List out the structure of a file in OS.

10. What is space map in OS?

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the advantages and disadvantages of virtual Machine.

Or

(b) What is the Purpose of System Programs? Discuss.

12. (a) Explain in brief about Synchronization in Inter process Communication with a neat structure.

Or

(b) Write a brief note on the different models of Inter process Communication.

13. (a) What is Monitor? Explain its functions.

Or

(b) How deadlock is characterized? Discuss.

14. (a) What is paging in OS? How size is allocated for a page?

Or

(b) Write a note on segmentation in operating system.

15. (a) What is mounting and unmounting of a file system? Discuss.

Or

(b) What are the ways of protecting a file? Explain.

2 **D–2237**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. What are the four basic operations of an operating system? Discuss in detail with a neat structure.

17. Explain about Processor Affinity and Load balancing in detail with a neat structure.

18. Describe in detail about Coffman condition with a neat structure.

19. Elaborate in detail about contiguous memory allocation with a neat structure.

20. Discuss in detail about various file access methods.

_____

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

Third Semester

INTERNET AND JAVA PROGRAMMING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Define Internet.

2. What is Internet Relay Chat?

3. Write the Java program structure.

4. What do you mean by type conversions?

5. Specify the purpose of creating a Constructor.

6. Define Package.

7. What is Thread?

8. How does an applet differ from an application?

9. Define Stream.

10. Write any two stream classes in Java.

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the features of any two web browsers.

Or

(b) Elaborate the concepts of Domain Name System.

12. (a) Describe the different data types available in Java Programming.

Or

(b) Illustrate relational and logical operators in Java with examples.

13. (a) How to create a Package and define the interfaces? Give sample program.

Or

(b) Demonstrate different types of arrays with the examples.

14. (a) How do you implement the 'Runnable' interface? Give a sample program.

Or

(b) Write the procedures to handle the exceptions in Java with examples.

15. (a) Write a short note on Applet Programming.

Or

(b) How to manage input/output files in Java? Explain with a sample program.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the working principles of Online Chatting with an example.

17. Create a Java Program for Student's Mark Sheet with five subject marks their total and percentage.

18. Elaborate the different overriding methods available in Java with the examples.

19. Give a brief account on Graphics Programming.

20. Discuss the various I/O classes in Java in detail.

————————

3

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

Third Semester

COMPUTER NETWORKS

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Define Computer Networks.

2. Generalize LAN and WAN.

3. Classify the different types of errors.

4. Differentiate Byte stuffing and Bit stuffing.

5. Describe the OSPF header format.

6. What do you mean by flooding?

7. How do you describe the header format of UDP?

8. What is Domain Name System?

9. Specify the uses of Crypto algorithms.

10. State any two security services.

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe different types of Guided Transmission Media.

Or

(b) Illustrate various network topologies in detail.

12. (a) Explicate the concepts of sliding window protocol.

Or

(b) Illustrate the functions of Carrier Sense Multiple Access Protocols.

13. (a) Differentiate Packet Switching and Circuit Switching.

Or

(b) Summarize the concepts of Congestion.

14. (a) How do you describe UDP and TCP?

Or

(b) Elaborate the methods of HTTP in detail.

15. (a) Explain the concepts of Transposition and Substitution Chipers.

Or

(b) Write the procedures followed in AES Algorithm.

D–2253

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Demonstrate the OSI architecture with neat diagram.

17. Explain the different methods used for error detection and correction.

18. Illustrate any two routing algorithms with the examples.

19. Discuss the TCP state machines and the transition diagrams.

20. Give a brief account on asymmetric Key cryptography.

———————

D–2253

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

Third Semester

DATA MINING AND WAREHOUSING

(CBCS 2020–2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   What are the some of the data mining techniques?

2.   Define meta learning.

3.   What are the two steps of association rule mining?

4.   What is association rule mining output?

5.   What are Self-Organizing Maps?

6.   What is the main key difference between supervised and unsupervised machine learning?

7.   List out the challenges in web mining

8.   Mention any two advantages of Rapidminer tools.

9.   What are the 5 V's in Big Data?

10.   What are the different Output formats in Hadoop?

PART B — (5 × 5 = 25 marks)

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

11. (a) Write short note on current trends in data mining.

Or

(b) Describe about data quality and data pre-processing.

12. (a) Discuss in detail the Pincher search algorithm.

Or

(b) Compare Apriori and partition algorithm.

13. (a) Write short note on unsupervised learning.

Or

(b) Describe the advantages of K means and K Mediod algorithm.

14. (a) Describer about web content mining and web usage mining.

Or

(b) How matlab tool is useful in visual data mining? Also give the uses of matlab.

15. (a) What are the types of big data? Discuss it.

Or

(b) Describe about the limitations of Hadoop.

D–2254

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Illustrate with diagram for data warehousing architecture.

17. Explain about Bayesian classification algorithm.

18. Enumerate the working principles of Genetic Algorithm.

19. Discuss about temporal and spatial mining.

20. Explain in detail the core Hadoop components

————————

3   **D–2254**

D-2255	**Sub. Code**
	31541

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   Mention any two challenges in IoT.

2.   What are the fundamental components of IoT?

3.   What is a library in Arduino?

4.   What is Zigbee?

5.   Define Arduino.

6.   List mostly used sensors types in IoT.

7.   What are local variables and global variables in Python?

8.   What is name space in Python?

9.   What is self in Python?

10.   What is the difference between range & xrange?

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write a short note on elements of IoT Eco system.

Or

     (b) Enumerate the domain specific IoTs.

12. (a) Write short note on IoT systems management.

Or

     (b) Discuss SDN and NFV for IoT.

13. (a) What is smart Grid? Describe it.

Or

     (b) Write short note on cloud storage for IoT.

14. (a) Write a Python program to read a two digit number
          and to print the sum of the digits in it till the sum
          becomes a single digit number.

Or

     (b) What is meant by recursion? Explain.

15. (a) Write a python program to print numbers 1 to 100
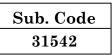   using while loop.

Or

     (b) Write short note on HTTPIib and URL lib.

D-2255

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain in detail the IoT Enabled technologies.

17. Write brief note on RFID and Wi-Fi.

18. Illustrate with diagram for Arduino and Raspberry Pi platforms.

19. Discuss the various data types in Python with examples. Also discuss the operations associated with them.

20. Explain any five array functions in Python with syntax and example.

————

D-2255

D-2256

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023

Fourth Semester

ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING

(CBCS 2020-21 Academic Year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   What is an Artificial Intelligence?

2.   Write the purpose of Mean-end Analysis.

3.   Specify any two issues in Knowledge representation.

4.   Define Control Knowledge.

5.   Differentiate Hard Computing and Soft Computing.

6.   What is ANN?

7.   Write any two operations of Fuzzy Sets.

8.   Define Defuzzification.

9.   Differentiate Traditional and Genetic Algorithm.

10.   What do you mean by Mutation?

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe any two AI techniques in detail.

Or

(b) Elaborate the concepts of Hill Climbing method.

12. (a) What is knowledge representations? Explain them.

Or

(b) How to represent the simple facts in logic? Give an example.

13. (a) Describe the various applications of Soft Computing.

Or

(b) Illustrate the steps involved in learning processes of ANN.

14. (a) List and explicate the properties of Fuzzy Sets.

Or

(b) Illuminate the concepts of Fuzzy Composition.

15. (a) Elaborate the various elements of Genetic Algorithm.

Or

(b) Write a short note on Schema Theorem.

D-2256

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. How to define the problem as a state space search? Explain with sample problem.

17. Give a brief account on Forward and Backward Reasoning.

18. Explain any two ANN models in detail.

19. Briefly explicate any two Fuzzy membership functions.

20. Describe the various applications of Genetic Algorithm in detail.

————————

D–2257		Sub. Code
		31543

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

Fourth Semester

BIGDATA ANALYTICS AND R PROGRAMMING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. List out the various applications of Big data.

2. What is Numerical Data? Give an example.

3. Define mapping.

4. What is recommendation.

5. What is NoSQL?

6. What are the four types of NoSQL databases?

7. List out the essentials of the R languages.

8. Give an example for *function definition*.

9. What are Repositories?

10. Define frames.

PART B — (5 × 5 = 25 marks)

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

11. (a) List and Explain the different characteristic of Big data in detail.

    Or

    (b) Explain the Evolution of Big data in detail.

12. (a) List and explain the various Functions are used in Map Reduced algorithm.

    Or

    (b) How do you count the given input Words using Map Reduce? Explain in detail.

13. (a) Differentiate SQL and NoSQL.

    Or

    (b) How do you manage Big data generation using NoSQL? Explain in detail.

14. (a) List and explain the various built in functions are used in R language.

    Or

    (b) What is recursion? Explain with example.

15. (a) How do you create and access a list element? Explain with example.

    Or

    (b) How do you extract data from data frame? Explain with example.

D–2257

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the following

    (a) Challenges of Big Data and

    (b) Uses of Big Data

17. Explain the concept of nearest neighbor search with example.

18. List and explain the various NoSQL business drivers in detail.

19. Discuss the various operators are used in R languages with example.

20. Explain the following.

    (a) Manipulation of array elements and

    (b) Data reshaping.

——————————

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023.

Fourth Semester

MOBILE APPLICATION DEVELOPMENT

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   What is mobile Platform?

2.   List out the mobile operating systems.

3.   Expand LBS.

4.   What is Informative apps?

5.   State sitemaps.

6.   State Mobile design.

7.   Expand J2ME.

8.   What is SDK?

9.   What is Android?

10.   Name the gadgets that support android Operating system.

PART B — (5 × 5 = 25 marks)

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

11. (a) Elucidate the story of mobile eco system.

Or

(b) Write short note on device platforms

12. (a) What is mobile websites? Explain its features

Or

(b) Elucidate the concept of Native applications.

13. (a) What is Prototyping? Explain in detail.

Or

(b) Clarify the concept of elements of mobile design.

14. (a) Write brief note on MID let programming

Or

(b) Describe about J2ME SDK.

15. (a) Write detailed note on android development environment

Or

(b) Clarify the concept of Android AVD.

PART C — (3 × 10 = 30 marks)

Answer any Three questions

16. Explain the applications of mobile eco system.

17. Describe in detail about Informative apps.

18. Write brief note on mobile design tools.

19. Neatly sketch the concept of J2ME architecture.

20. Clarify the following

(i) Apple IOS   (ii) RIM Blackberry

—————————

D–2258