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.

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.

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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++?

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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.

2 **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.

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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.

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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.

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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.

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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.

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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.

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DISTANCE EDUCATION

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

Fifth Semester

COMPUTER NETWORKS

(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 components of Computer Networks?

2. Compare LAN and WAN.

3. What is Block coding?

4. Write about Go back n ARQ?

5. What is Packet switching?

6. Write the difference between broadcast and multicast routing.

7. Differentiate TCP and UDP.

8. What is called Remote file access?

9.   Define: Cipher.

10.   What is called Symmetric key cryptography?

SECTION B — (5 × 5 = 25 marks)

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

11.   (a)   Explain about various LAN topology.

Or

(b)   Write short notes on Transmission media.

12.   (a)   Write short notes on Cyclic Redundancy Check.

Or

(b)   Explain the working of ALOHA.

13.   (a)   Write about Virtual circuits and Datagram subnets.

Or

(b)   Explain Hierarchical routing algorithm.

14.   (a)   Compare and Contrast : Connection oriented vs Connection less services.

Or

(b)   Discuss the services of Transport layer.

15.   (a)   Explain the cryptographic principles.

Or

(b)   Write short notes on Security services

2   **D–2242**

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Outline the architecture of OSI reference model and explain each layer.

17. Explain the Data link layer protocols.

18. Explain the following routing algorithms:

(a) Shortest path routing

(b) Dynamic routing

19. Discuss on:

(a) DNS

(b) Remote Procedure Call

(c) SNMP

(d) HTTP

20. Explain AES encryption algorithm.

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D–2242

DISTANCE EDUCATION

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

Fifth Semester

DATA MINING AND DATA WAREHOUSING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Why data cleaning is important in data mining?

2. Define the term KDD.

3. Write down any four classification techniques in data mining.

4. Why support value is essential in Apriori algorithm?

5. Define the term K in k means clustering.

6. Write down any two applications of Genetic algorithm and Neural Networks.

7. What is called temporal data?

8. What is called regular expression?

9. What is called map reduce?

10. What is Bigdata?

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Explain about data warehouse Schema.

Or

(b) Describe the process of data cleaning in data mining.

12. (a) Explain about frequent patterns with suitable example.

Or

(b) Describe the representation of rules in Rules-Based Classification with simple example.

13. (a) Explain about FP Tree growth algorithm with suitable example.

Or

(b) Write short notes on hierarchical clustering.

14. (a) Differentiate the Web structure mining and Web content Mining.

Or

(b) Describe about overview of temporal data mining.

D–2243

15. (a) Write shod notes core components of Hadoop.

Or

(b) Explain about Applications of Big data.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain in detail about association rules with suitable examples.

17. Explain the procedure of Bayesian classification in detail.

18. Explain the characteristic of genetic algorithm.

19. Explain in detail about of Text mining and text clustering.

20. Discuss about the approaches of traditional analytics and Big data analytics.

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Sub. Code
31561/34061

DISTANCE EDUCATION

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

Sixth 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. How to centralize the Email communication?

4. How will the Cloud Services collaborate on To-Do Lists?

5. Define Contact Management in Cloud.

6. What types of Calendars can you create with Google Calendar?

7. What is the Web-based storage available in Cloud?

8. What do you mean by Service Level Agreements in Cloud Computing?

9. Define Amazon EC2.

10. What are Virtualized Data Centers in Cloud?

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe in brief about the Developing Cloud Service Models with neat sketch.

Or

(b) Briefly explain the Pros and Cons of Cloud Computing.

12. (a) How will the Scheduling Collaborate takes place in Cloud Paradigm?

Or

(b) Write Short notes on Cloud Computing for Corporation.

13. (a) Elucidate the Online Calendar Applications in Cloud Computing.

Or

(b) Describe in detail about Event Management in Cloud Computing.

14. (a) Write short notes on Aneka Services.

Or

(b) Describe the Map-Reduce with suitable illustration.

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

Or

(b) Recommend the Web based Communication Tools used in Cloud.

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PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain in detail about the Cloud Computing Service Development Tools with neat Sketch.

17. What are the various ways to Collaborating on Household budgets using Cloud? Explain in detail.

18. Describe in detail on the Word Processing and Database via Online with suitable example.

19. Explain in detail with proper illustration, the Cloud File System Implementation.

20. Explain in detail on Nimbus with suitable example.

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D-2246	**Sub. Code**
	31562/34062

DISTANCE EDUCATION

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

Sixth Semester

SOFT COMPUTING

(CBCS 2018-19 Academic Year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are the applications of soft computing?

2. What do you mean by neuron?

3. Write the meaning of the term back propagation.

4. What is meant by associative memory?

5. Write an example for crisp set.

6. What is fuzzy equivalence?

7. Define the term fuzzy logic.

8. Define the term fuzzy rule.

9. Define the term mutation.

10. List the applications of Genetic Algorithm.

PART B — (5 × 5 = 25 marks)

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

11. (a) Soft computing vs Hard computing – Discuss.

Or

(b) Brief on the process of learning.

12. (a) Write short notes on Boltzmann machine.

Or

(b) Give a brief account on ART network.

13. (a) What is fuzzy composition? Explain briefly.

Or

(b) Explain fuzzy tolerance relation.

14. (a) Explain briefly about Approximate Reasoning.

Or

(b) "Formation of Fuzzy Rules" — Discuss.

15. (a) Explain any two cross over mechanisms.

Or

(b) Explain the terms population, chromosome, fitness function.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain in detail about Neural Network Architecture.

17. Describe McCulloch-Pitss Model.

2 **D-2246**

18. Explain about Bam and Hopfield Network.

19. Explain in detail about Kohonen Self Organizing Network.

20. Elaborate on Fuzzy Rule formation and decomposition.

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DISTANCE EDUCATION

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

Sixth Semester

BIG DATA ANALYTICS

(CBCS 2018-19 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   What is Big Data Analytics?

2.   What are the advantages of Big Data Analytics?

3.   Mention some applications of Nearest Neighbour search.

4.   Compute the Jaccard Similarity of each pair of the following sets : {1, 2, 3, 4, 5}, {1, 6, 7}, {2, 4, 6, 8}.

5.   Define Concept Drift.

6.   What is a Bloom filter?

7.   List the two major categories of search engines.

8.   Define Cloaking.

9. Write a note on the technique of local optimality for community detection in social networks.

10. What is the significance of a triangle in a social graph?

PART B — (5 × 5 = 25 marks)

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

11. (a) Discuss on some applications of Big Data Analytics.

Or

(b) Explain the limitations of Hadoop.

12. (a) Discuss briefly on the steps involved in Map and reduce tasks of MapReduce.

Or

(b) Write short notes on the applications of Nearest Neighbour search.

13. (a) Discuss briefly on types of datastream queries with suitable example for each.

Or

(b) With a neat sketch, explain the abstract architecture of a data stream mining system.

14. (a) Discuss briefly on the typical characteristics of a social network.

Or

(b) Write short notes on clustering in social networks.

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15. (a) How do you handle link spams? Explain briefly.

Or

(b) Briefly explain the term social graph.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write short notes on the components of Hadoop eco system model.

17. (a) Consider the data matrix with four points x1, x2, x3, x4 with two attributes each in Table below. Compute the Manhattan and Euclidean distances.

Data Matrix

Point	Attribute 1	Attribute 2
X1	1	2
X2	3	5
X3	4	0
X4	2	5

(b) Discuss briefly on Plagiarism detection.

18. Discuss in detail about the issues with respect to data stream query processing.

19. Write short notes on Linkspams.

20. Discuss on the methods for discovery of communities in a social graph.

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D–2247