D–4508

Sub. Code
31511

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2024.

First Semester

DIGITAL COMPUTER ORGANIZATION

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is digital computer?

2. State any two Boolean laws.

3. What is Encoder?

4. State the uses of Shift registers.

5. Write the responsibilities of timing and control.

6. Draw the design of basic computer.

7. Enlist the stack operations.

8. Differentiate Synchronous and Asynchronous data transmissions.

9. What do you mean by associate memory?

10. Specify the benefits of virtual memory.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the functions of binary arithmetic circuits in detail.

Or

(b) Elaborate the concepts of Sum of Products with an example.

12. (a) Draw the functions of Multiplexer and Demultiplexers.

Or

(b) Give a brief note on BCD counters.

13. (a) List and explain the purpose of various computer instructions.

Or

(b) Illustrate the mechanisms of interrupt instruction cycle in detail.

14. (a) Describe the general register organization with neat diagram.

Or

(b) Explicate the different modes of transfer.

15. (a) What is main memory? What are its different types? Explain.

Or

(b) Write a short note on memory management hardware.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe the fundamental concepts of Boolean algebra in detail.

17. Elaborate the functions of various types of shift registers.

18. Why do we need instruction cycle? Explain the steps involved in an instruction cycle.

19. Give a brief account on stack organization.

20. Discuss the characteristics of common computer memories in detail.

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D–4509

Sub. Code
31512

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2024.

First Semester

OBJECT ORIENTED PROGRAMING AND C++

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Write the benefits of OOP language.

2. Draw the hierarchy of console stream classes.

3. Define an object.

4. State the uses of constructor and destructor.

5. What is meant by operator overloading?

6. Write the benefits of inheritance.

7. Define Class Template.

8. Enlist the different types of a file.

9. How exceptions are handled in C++?

10. Draw the benefits of exception handling.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the basic concepts of OOP.

Or

(b) Describe the structure of C++ program. Explain in detail.

12. (a) List and explicate the concepts of Classes and Objects.

Or

(b) How to create multiple constructors in a class? Explicate with an example.

13. (a) Why do we need virtual functions? State the reasons with justification.

Or

(b) What is meant by Operator Overloading? Explicate its mechanisms.

14. (a) Illustrate the different types of streams in C++.

Or

(b) Elaborate the concepts of file pointers and their manipulators.

15. (a) Describe briefly the standard exceptions in C++.

Or

(b) How are exceptions used in operator overloaded functions? Give sample program.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. What is manipulators in C++? How many manipulators are in C++? Explain them.

17. Illustrate the various types of functions with examples.

18. Discuss the different forms of Inheritance with their structures.

19. How to inherit the class templates in C++? Explicate with an example.

20. What is Exception Handling? Explain the different blocks used for Exception handling.

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D–4510

Sub. Code
31513

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2024.

First Semester

DATA STRUCTURE AND ALGORITHMS

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. What are some applications of Data structures?

2. Write any two characteristics of an Array.

3. What are different operations available in queue data structure?

4. What is a linked list data structure?

5. Define Binary trees.

6. Mention any two applications of binary tree.

7. List out any two drawbacks of linear searching.

8. What are the applications of searching?

9. Compare the selection sort and insertion sort.

10. Why do we sort the large databases?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What is an algorithm? What is the need for an algorithm?

Or

(b) What is the time and space Complexity of Algorithm? Describe it.

12. (a) How to represent the linked list? Discuss it.

Or

(b) Write short note on applications of stack.

13. (a) How do you insert and delete a node from binary tree?

Or

(b) Write short note on binary search tree and its uses.

14. (a) Describe the Linear Search Algorithm.

Or

(b) Compare the linear and binary search algorithms with respect to time complexity.

15. (a) Write short note on tree sort and its advantages.

Or

(b) Illustrate the Radix sort with an example.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Enumerate the different types of arrays with their syntax and uses.

17. Write brief note on merging list and header linked list with an example.

18. Explain in detail the hashing techniques with suitable example.

19. Describe about the binary search algorithm with an example.

20. Write brief note on working principle of Quick sort, with an example.

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D–4511

Sub. Code
31522

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2024.

Second Semester

RELATIONAL DATABASE MANAGEMENT SYSTEMS (RDBMS)

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What does RDBMS stand for?

2. Name the fundamental unit of data storage in an RDBMS.

3. Which language is commonly used to query and manipulate data in an RDBMS?

4. What is the purpose of primary keys in a relational database?

5. Define the term “normalization” in the context of RDBMS.

6. Mention one advantage of using an RDBMS over a flat-file database.

7. In the context of RDBMS, what is an index?

8. What is a foreign key, and what is its role in relational databases?

9. Explain the ACID properties and their significance in the context of transactions within an RDBMS.

10. Name one popular open-source RDBMS.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Define Data Abstraction. Explain it.

Or

(b) Explain the Query Processor in detail.

12. (a) Explain: Joins with suitable examples.

Or

(b) Write a short note on Domain Relational Calculus.

13. (a) Explain the Aggregative Operators in detail.

Or

(b) Write the Multi Valued Dependencies.

14. (a) Write a short note on Buffer Management.

Or

(b) Write a short notes on Multiple Granularity.

15. (a) Explain B+ with suitable example.

Or

(b) Explain Index Data Structures in detail.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain: DML Commands with examples.

17. Explain Relational Algebra with examples.

18. Explain: Normal Forms with suitable example.

19. Write a detailed note on Advance Recovery Systems.

20. Explain: File Organization and Indexing.

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D–4512

Sub. Code
31523

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2024.

Second Semester

COMPUTER GRAPHICS

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define line with its types.

2. How are the polygons filled?

3. Differentiate between 2D and 3D animation. Give example.

4. What is Text clipping? Give example.

5. Mention the limitation of Hermite Curve.

6. What are Polygon meshes?

7. What is 3D coordinate system?

8. Differentiate between window and viewport.

9. What is Octree method?

10. What is Morphing?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain in brief about scale line and Flood fill algorithm.

Or

(b) Discuss about various algorithms used to fill Polygon with example.

12. (a) What is shear transformation? Explain in brief about its types with a neat structure.

Or

(b) Write short notes on composite transformation.

13. (a) Differentiate between shading and illumination models.

Or

(b) Write a brief note on surface of the Polygon.

14. (a) Write down the advantages of Clipping in 3D.

Or

(b) Discuss in brief about Bitmap graphics.

15. (a) Write a brief note on the types of Animation.

Or

(b) Mention in brief about general animation functions.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe in detail about Bresenham's circle drawing algorithm with a neat structure.

17. Explain in detail about window to viewport transformation with a neat structure.

18. What is illumination? Discuss in detail about its types.

19. What are the different types of curves? Explain any one in detail with a neat structure.

20. Explain the following :

    (a) Area subdivision methods,

    (b) Octree methods.

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D–4513

Sub. Code
31532/34032

DISTANCE EDUCATION

M.C.A./M.C.A. (Lateral Entry) DEGREE EXAMINATION, MAY 2024.

Third Semester

OPERATING SYSTEM

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Name the basic types of Operating System.

2. Define ISA.

3. What is processor Affinity?

4. Define preemptive and non preemptive algorithm.

5. Write the four conditions of deadlock.

6. What is the problem with synchronization of thread?

7. Define worst fit.

8. Differentiate between swapping and thrashing

9. What is rotational Latency?

10. List out the operations performed in a file.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short notes on the issues in Designing and implementing OS.

Or

(b) What are the services available in operating system? Discuss.

12. (a) Mention different approaches to implement Inter process Communication.

Or

(b) Bring out various scheduling criteria used in operating system.

13. (a) What is critical section problem? Explain with example.

Or

(b) What do you mean by deadlock avoidance in OS? How it is handled?

14. (a) Differentiate between contiguous and non contiguous memory allocation.

Or

(b) Differentiate between swapping and thrashing.

15. (a) Mention the benefits of DAS.

Or

(b) What are various file allocation methods? Explain any one.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. What are the different types of system calls? Explain in detail about its working procedure and its types with a neat structure.

17. What is multiprocessor scheduling in OS? Discuss in detail about its types with a neat structure.

18. Explain in detail about hardware synchronization with example.

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

20. What is free space management in OS? Explain in detail about various methods that are used to manage free space.

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D–4514

Sub. Code
31551/34051

DISTANCE EDUCATION

M.C.A./M.C.A. (Lateral Entry) DEGREE EXAMINATION, MAY 2024.

Fifth Semester

COMPUTER NETWORKS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define Computer Networks.

2. State any two advantages of start topology.

3. How does framing improve network performance?

4. What is meant by bit stuffing?

5. Define packet switching.

6. What is multicast routing?

7. List the flag used in TCP header.

8. What is a socket address?

9. Define cryptography.

10. Write any two advantages of RSA algorithm.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the applications of Computer Networks.

Or

(b) Summarize the types of guided transmission media with their merits and demerits.

12. (a) Briefly explain any two methods used for error detection and correction.

Or

(b) Relate persistent CSMA with non-persistent CSMA.

13. (a) Identify the metrics used by routing protocols.

Or

(b) What are the two approaches to packet switching? Explain them.

14. (a) Compare connection oriented and connectionless services.

Or

(b) List and explicate any two transport layer services.

15. (a) Describe the cryptographic principles n detail.

Or

(b) What are the basic security services? Explicate them.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Demonstrate the functions of OSI layers.

17. Enumerate any two data link layer protocols with neat diagrams.

18. Discuss the functions of any two routing algorithms in detail.

19. Identify and explain the different phases used in TCP connection.

20. Illustrate the security mechanisms provided in DES and AES algorithms.

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D–4515

Sub. Code
31552/34052

DISTANCE EDUCATION

M.C.A./M.C.A. (Lateral Entry) DEGREE EXAMINATION, MAY 2024.

Fifth Semester

DATA MINING AND WAREHOUSING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define Data Warehousing.

2. What are the current trends in data mining?

3. Write the need for association rule mining.

4. List out the advantages of Bayesian classification.

5. Write any two different forms of neural networks.

6. Write any two clustering paradigms.

7. What do you mean by spatial mining?

8. Mention the advantages of weka tool in visual data mining.

9. What is Hadoop?

10. Write any two characteristics of big data

PART B — (5 × 5 = 25 marks)

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

11. (a) Write short note on Data warehouse technology.

Or

(b) Illustrate the various Data mining techniques.

12. (a) Discuss about decision tree classification.

Or

(b) Write short note on Pincher search algorithm.

13. (a) Explain the working of Neural Network genetic algorithm.

Or

(b) Differentiate supervised and unsupervised learning.

14. (a) Write short note on Text mining and text clustering.

Or

(b) Discuss about knowledge mining in detail.

15. (a) What are the technologies available for big data?

Or

(b) Write note on data mining in business process.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss in detail the data warehouse architecture with diagram.

17. Enumerate the Apriori algorithm and its uses.

18. Illustrate the hierarchical clustering and categorical clustering algorithms.

19. Write brief note on and two tools and techniques for implementing visual data mining.

20. Explain in detail the core components of Hadoop.

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D–4516

Sub. Code
31561/34061

DISTANCE EDUCATION

M.C.A./M.C.A.(Lateral Entry) DEGREE EXAMINATION, MAY 2024.

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. Define cloud computing.

2. Mention any two benefits of cloud computing.

3. What are uses of Cloud Computing for the Family?

4. How can you share the family photos in cloud?

5. List out the uses of AOL Calendar.

6. What are Schedule book?

7. How can privacy in cloud be maintained?

8. List out any two cloud service providers.

9. Why is Eucalyptus used in cloud computing?

10. What are the advantages of Open Nebula in cloud computing?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write a short note on working of cloud computing.

Or

(b) Illustrate the procedure to developing cloud services.

12. (a) Write short note on communicating across the community using cloud.

Or

(b) Discuss about collaborating on household budgets.

13. (a) What are the applications of CRM?

Or

(b) Illustrate the benefits of Web-Based Word Processors.

14. (a) Write short note on cloud service level agreements.

Or

(b) What are the four levels of federation? Describe it.

15. (a) What is the architecture of Eucalyptus cloud? Explain it.

Or

(b) Write short note on open source cloud platforms.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail the types of cloud service development.

17. Write brief note on cloud computing for corporation.

18. Give a brief account on online planning and task management.

19. Describe about Hadoop framework and its uses.

20. Illustrate the Nimbus architecture.

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D–4517

Sub. Code
31562/34062

DISTANCE EDUCATION

M.C.A./M.C.A (Lateral Entry) DEGREE EXAMINATION,
MAY 2024.

Sixth Semester

SOFT COMPUTING

(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 Soft Computing?

2. Define an artificial neural network.

3. List the limitations of perceptron.

4. What are the two types of BAM?

5. Define fuzzy sets.

6. Give the cardinality of fuzzy relation.

7. State the importance of fuzzy arithmetic.

8. What are fuzzy measures?

9. What is meant by genetic algorithm?

10. Define mutation.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) List and explain any five application scope of Neural Networks.

Or

(b) Compare supervised and unsupervised learning.

12. (a) What is associative memory? Briefly explain auto-associative memory.

Or

(b) Briefly explain Adaptive Resonance Theory Network.

13. (a) Discuss the operations of crisp sets.

Or

(b) Explain the features of membership functions.

14. (a) Write short notes on fuzzy propositions.

Or

(b) Mention any ten applications of fuzzy logic controller.

15. (a) Discuss briefly about Messy Genetic Algorithms.

Or

(b) Explain any five applications of characteristics of Genetic Algorithms.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the architecture of Neural Network.

17. Describe Multiple Adaptive Linear Neurons model in detail.

18. What is defuzzification? Explain any three methods of defuzzifications.

19. Elaborate the Architecture and Operation of FLC System.

20. Discuss the characteristics of Genetic Programming in detail.

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D–4518

Sub. Code
31563/34063

DISTANCE EDUCATION

M.C.A./M.C.A. (Lateral Entry) DEGREE EXAMINATION, MAY 2024.

Sixth Semester

BIG DATA ANALYTICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. Define Big Data.

2. What is Hadoop?

3. What is mapper?

4. Explain the term Algorithm.

5. What is mining data streams?

6. List any two applications of data streams.

7. Define Pager rank.

8. What is social network?

9. Define Social network mining.

10. List any four social media networks.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain the different types of Big Data.

Or

(b) Describe about Hadoop Eco System with necessary diagram.

12. (a) How do you find the similar items? Explain.

Or

(b) Write short note on Nearest Neighbor Search.

13. (a) How do you use sampling in data streams? Explain.

Or

(b) Explain the Data stream management system.

14. (a) Write a short note on history of search engines and spam.

Or

(b) How do you use the Link Spam? Explain.

15. (a) How do you use the social network mining? Explain.

Or

(b) How do you use the Sim Rank? Explain.

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

Answer any THREE questions.

16. Neatly sketch the concept of Core Hadoop Components with diagram.

17. Explain in detail about Map Reduce Algorithm.

18. List the issues in Data stream query processing.

19. How do you use the collaborative filtering? Explain briefly.

20. Discuss in detail about Discovering communities in social graph.

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