**D–4508**

| Sub. Code |
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| 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 |
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| 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 |
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| 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–4519**

| Sub. Code |
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| 31514 |

DISTANCE EDUCATION

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

First Semester

DISCRETE MATHEMATICS

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define disjunction.

2. Write down the symbolic form of the statement "All men are good".

3. When is relation is said to be reflexive?

4. Define Poset.

5. Give an example of one-one function but not onto.

6. Find the inverse permutation of $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 3 & 1 & 5 & 4 \end{pmatrix}$.

7. Define abelian group.

8. Give an example of a subgroup.

9. Draw a graph of the given adjacency matrix $\begin{pmatrix} 1 & 1 & 1 & 0 \\ 1 & 0 & 1 & 1 \\ 1 & 0 & 1 & 0 \\ 1 & 1 & 1 & 0 \end{pmatrix}$.

10. State Baye's theorem.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Show that $(P \to Q) \wedge (R \to Q) \Leftrightarrow (P \vee R) \to Q$.

Or

(b) Among 50 students in a class, 26 got an A in the first examination and 21 got in the second examination. If 17 students did not get an A is either examination, how many students got an A in both examinations?

12. (a) If R and S be relations on a set A represented by the matrices $M_R = \begin{bmatrix} 0 & 1 & 0 \\ 1 & 1 & 1 \\ 1 & 0 & 0 \end{bmatrix}$ and $M_S = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$. Find the matrices that represent :

(i) $R \cup S$

(ii) $R \cap S$.

Or

(b) Let $X = \{2, 3, 6, 12, 24, 36\}$ and the relation $\leq$ be such that $x \leq y$ if $x$ divides $y$. Draw the Hasse diagram.

13. (a) Show that the function $f(x)= x^3$ and $g(x)= x^{\frac{1}{3}}$ for $x \in R$ are inverse of one another.

Or

(b) If $A$ and $B$ are any subsets of $U$, then prove that $\psi_{A\cap B}(x)= \psi_A(x)\cdot\psi_B(x)$.

14. (a) Show that the set N of Natural numbers is a semigroup under the operation $x * y = \max\{x, y\}$. Is it a monoid?

Or

(b) Show that if every element in a group is its own inverse, then prove that the group must be abelian.

15. (a) Prove that the connected multi graph has an Euler path if and only if has exactly two vertices of odd degree.

Or

(b) If $A$ and $B$ are two events such that $P(A\cup B)= 3/4$, $P(A\cap B)= 1/4$ and $P(\overline{A})= 2/3$, then find $P(B)$.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Show that the following implications by using indirect method :

$(R \rightarrow \neg Q)$, $R \vee S$, $S \rightarrow \neg Q$, $P \rightarrow Q \Rightarrow \neg P$

17. Let $R$ be the relation represented by the matrix $M_R = \begin{pmatrix} 0 & 1 & 1 \\ 1 & 1 & 0 \\ 1 & 0 & 1 \end{pmatrix}$. Find the matrices that represented :

(a) $R^{-1}$

(b) $\overline{R}$

(c) $R^2$.

18. Let $f : X \to Y$ and $g : Y \to Z$ be any two invertible functions, then show that $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$.

19. If $(G, *)$ is an abelian group, then prove that for all $a, b \in R$, then prove that $(a * b)^n = a^n * b^n$.

20. Prove that a simple graph with $n$ vertices and $k$ components can have atmost $\frac{(n-k)(n-k+1)}{2}$ edges.

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**D–4520**

| Sub. Code |
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| 31521 |

DISTANCE EDUCATION

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

Second Semester

ACCOUNTING AND FINANCIAL MANAGEMENT

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. State the basic features of accounting principles.

2. What is inventory turnover ratio?

3. Explain the terms ‘funds’ and ‘fund flow’.

4. What is cost volume profit analysis?

5. What is marginal costing?

6. What are the objectives of budgetary control?

7. What is variance analysis?

8. What is capital budgeting?

9. What is weighted average cost of capital?

10. What is staple dividend?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) State the advantages and limitations of ratio analysis.

Or

(b) Compute Cash from operations from the following :

| | Rs. |
|---|---|
| Net profit for the year 2003-04 | 80,000 |
| Depreciation written off on Fixed Assets | 11,000 |
| Profit on Sale of Building | 22,000 |
| Loss on Sale of Machine | 13,000 |
| Increase in Current Assets (Except cash) | 46,000 |
| Increase in Current Liabilities | 29,000 |

12. (a) "Cost Volume Profit Analysis" is helpful for profit planning – Explain.

Or

(b) From the following information find out :

(i) P/V ratio

(ii) Sales and

(iii) Margin of safety

Fixed cost : Rs. 40,000

Profit : Rs. 20,000

B.E.P. : Rs. 80,000

13. (a) Calculate Material Variances from the following information :

| | |
|---|---|
| Standard Price of material per kg | Rs. 4 |
| Standard Usage of materials | 800 kgs |
| Actual Usage of materials | 920 kgs |
| Actual price of materials per kg | Rs. 3 |
| Actual Cost of materials | Rs. 2,760 |
| Standard cost of material for actual production | Rs. 3,200 |

Or

(b) What is Zero Base Budgeting? Explain the steps involved in Zero Base Budgeting.

14. (a) Explain the functions of financial management.

Or

(b) Raghav Ltd. is considering to replace a new machine for its production. There are two alternative models X and Y of the new machine. Prepare a statement of profitability showing the pay-back period from the following information :

| | Machine X | Machine Y |
|---|---|---|
| Estimated life of the Machine | 4 years | 5 years |
| | Rs. | Rs. |
| Cost of the machine | 1,80,000 | 3,60,000 |
| Estimated savings in scrap | 10,000 | 16,000 |

| | Rs. | Rs. |
|---|---|---|
| Estimated savings in direct wages | 1,20,000 | 1,60,000 |
| Additional cost of maintenance | 16,000 | 20,000 |
| Additional cost of supervision | 24,000 | 36,000 |

15. (a) What are the different types of dividend policies?

Or

(b) Examine the usefulness of Debentures as an instrument of long-term finance.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. From the following are the Balance Sheets of Arun and Co. Ltd. prepare Fund Flow Statement :

Balance sheets as on March 31, 2010 and March 31, 2011.

| Liabilities | 2010 Rs. | 2011 Rs. | Assets | 2010 Rs. | 2011 Rs. |
|---|---|---|---|---|---|
| Share capital | 45,000 | 45,000 | Fixed Assets | 40,000 | 32,000 |
| General Reserve | 30,000 | 31,000 | Investment | 5,000 | 6,000 |
| P & L A/c | 5,600 | 6,800 | Stock | 24,000 | 21,000 |
| Creditors | 16,800 | 13,400 | Debtors | 21,000 | 45,500 |
| Tax provision | 7,500 | 1,000 | Bank Balance | 14,400 | 19,700 |
| Loan | — | 27,000 | | | |
| | 1,04,900 | 1,24,200 | | 1,04,900 | 1,24,200 |

Adjustments :

(a) Investment costing Rs. 800 sold for Rs. 850 and another investment purchase for Rs. 1,800

(b) Depreciation of fixed assets Rs. 7,000

(c) Provision for Income Tax Rs. 1,000

(d) A part of fixed asset costing Rs. 1,000 sold for Rs. 1,200

(e) Dividend paid Rs. 4,000.

17. Distinguish between Financial Accounting and Management Accounting.

18. From the information below, prepare a cash budget for XYZ Company for April, May and June 2019 in a columnar form :

| Month | Sales Rs. | Purchases Rs. | Wages Rs. | Expenses Rs. |
|---|---|---|---|---|
| January | 80,000 | 45,000 | 20,000 | 5,000 |
| February | 80,000 | 40,000 | 18,000 | 6,000 |
| March | 75,000 | 42,000 | 22,000 | 6,000 |
| April | 90,000 | 50,000 | 24,000 | 6,000 |
| May | 85,000 | 45,000 | 20,000 | 6,000 |
| June | 80,000 | 35,000 | 18,000 | 5,000 |

You are further informed that :

(a) 10% of purchases and 20% of sales are for cash.

(b) The average collection period of the company is half a month and credit purchases are paid off regularly after one month.

(c) Wages are paid half monthly and the rent of Rs. 500, excluded in expense, is paid monthly.

(d) Cash and bank balance on April 1 was Rs. 15,000.

19. Briefly explain the factors affecting the working capital requirements of company.

20. Describe the determinants of capital structure.

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**D–4511**

| Sub. Code |
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| 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 |
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| 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–4521**

| Sub. Code |
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| 31524 |

DISTANCE EDUCATION

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

Second Semester

VISUAL PROGRAMMING WITH .NET

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Write a short note on status bar.

2. State the uses of float windows.

3. What is meant by expression?

4. Mention the use of enum.

5. Define the term interface.

6. Define the term default name space.

7. List out the advantages of break point.

8. How to add a table in a database? Write steps.

9. How will you set the properties of controls?

10. Write a short note on data grid.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short notes on toolbar and work area.

Or

(b) Discuss on the addition of components in the toolbox.

12. (a) Briefly explain the different primitive data types.

Or

(b) What is called accessors? Explain with a sample code.

13. (a) How will you manage the dependencies in projects? Explain with illustrations.

Or

(b) Brief on the class view in visual studio.

14. (a) Explain about call stack window and quick stack window.

Or

(b) Explain the various options on break point context menu.

15. (a) Briefly explain the relationship between MVC objects.

Or

(b) Explain the different types of layouts in WPF.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss in detail about the various types of project in VS.

17. What is the significance of namespace? Write the syntax for creating a namespace.

18. Explain the need for cleaning the projects and solution.

19. Describe the usage of stored procedure with the help of examples.

20. Discuss the process of adding a data source.

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**D–4522**

| Sub. Code |
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| 31531 |

DISTANCE EDUCATION

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

Third Semester

SOFTWARE ENGINEERING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define Software Engineering.

2. How to assess the processes? What is process pattern?

3. Write the steps to validate the software requirements.

4. Define Data Model.

5. What is Software Architecture?

6. State any two rules to evaluate the system design.

7. What do you mean by unit testing?

8. Specify the various metrics for Analysis Model.

9. Differentiate Reactive and Proactive risk strategies.

10. What is meant by software reviews?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the generic view of a process in detail.

Or

(b) Illustrate any two increment process models.

12. (a) How do you validate the requirements? Explain the mechanisms.

Or

(b) Elaborate the steps involved in Object-Oriented Analysis.

13. (a) Write the features of design engineering.

Or

(b) How to design the user interfaces? Illustrate with the golden rules.

14. (a) What is debugging? Write the importance of software debugging.

Or

(b) List the metrics used for software testing.

15. (a) How do you identify the risks? Explain with the strategies.

Or

(b) Give a brief account on RMMM plan.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss any two evolutionary process models.

17. How to create a behavioral model? Explicate its procedures.

18. Discuss the phases involved in architectural design in detail.

19. Illustrate the various test strategies for Object-Oriented Software.

20. Explicate the different Formal Technical Review techniques.

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**D–4513**

| Sub. Code |
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| 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–4523 | Sub. Code |
|---|---|
| | 31533 |

DISTANCE EDUCATION

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

Third Semester

INTERNET AND JAVA PROGRAMMING

(CBCS 2020-21 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define: Email.

2. What is meant by chat?

3. Define: Variable.

4. What is the use of JVM?

5. Define: Constructor.

6. List built in packages available in java.

7. Define: Multithreading.

8. What are the attributes used in drawing a rectangle in applet?

9. Define: skip() method.

10. What are the standard streams available in java?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Discuss about Telnet.

Or

(b) Differentiate between features of any two web browsers.

12. (a) Write a Java program to find factorial of a number.

Or

(b) Elaborate on data types in java.

13. (a) Explain method overloading in java.

Or

(b) Write in detail about any six string handling functions.

14. (a) Write an applet program to display the message "hello world".

Or

(b) How to implement runnable interface in thread? Explain.

15. (a) How to write a character in a file? Explain.

Or

(b) Discuss about byte stream classes in java.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the functionalities of internet relay chat (IRC).

17. What is an operator? Explain the use of different types of operators.

18. Write a java program to perform addition of two matrices.

19. Describe the ways of handling exception in java.

20. Explain java reader class with an example.

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| D–4524 | Sub. Code |
|---|---|
| | 31534 |

DISTANCE EDUCATION

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

Third Semester

COMPUTER NETWORKS

(CBCS 2020-21 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is topology?

2. Differentiate analog and digital signals.

3. Define coding schemes.

4. How many ARQ protocols are there?

5. How does circuit switching work in computer networks?

6. Describe packetizing.

7. Define process-process communication.

8. Summarize IP addresses and port numbers.

9. Describe the encryption model.

10. Write any two features of RSA algorithm.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe different transmission modes in detail.

Or

(b) Explicate the various functions of OSI layers.

12. (a) What are the services provided by the data link layer? Explain them.

Or

(b) Explain the concepts of ALOHA.

13. (a) Elaborate the functions of switching and forwarding.

Or

(b) Demonstrate the mechanisms of hierarchical routing.

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

Or

(b) Illustrate the features of WWW.

15. (a) Write the principles of crypto system.

Or

(b) Give a brief account on AES algorithm.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss in detail about unguided transmission media.

17. Explain any two data link layer protocols.

18. Summarize the concepts of any two routing algorithms.

19. List and explicate the applications and services of Transport layer.

20. Elaborate the various security services in detail.

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| D–4525 | Sub. Code |
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| | 31535 |

DISTANCE EDUCATION

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

Third Semester

DATA MINING AND WAREHOUSING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define data warehouse schema.

2. How is a data warehouse different from a database?

3. What are the application of association rule mining?

4. Define Data Classification.

5. What is Similarity-based Clustering?

6. What are the different types of Learning / Training models in ML?

7. What is Visual Data Mining?

8. List out the advantages of Weka tool.

9. Why businesses are using Big Data for competitive advantage?

10. What are the three modes that Hadoop can run?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Enumerate the different forms of knowledge.

Or

(b) Write short note on OLAP operations in Dataware house.

12. (a) Write short note on FP Tree growth algorithm.

Or

(b) Discuss the decision tree classification in detail.

13. (a) What are the uses of Neural Networks? Discuss it.

Or

(b) Compare machine learning and data mining.

14. (a) Write short note on text clustering.

Or

(b) What is knowledge mining? Discuss about any one of the tool for implementing it.

15. (a) Write short note on traditional versus big data approach.

Or

(b) Discuss about Hadoop Ecosystem.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail the various data mining techniques.

17. Describe the Apriori algorithm with an example.

18. Write brief note on categorical clustering algorithms.

19. Discuss the various types of web mining.

20. Write brief note on technologies available for Big data.

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**D–4526**

| Sub. Code |
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| 31541 |

DISTANCE EDUCATION

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

Fourth Semester

INTERNET OF THINGS (IOT)

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define IoT and how it works.

2. List out various IoT Protocol.

3. Examine whether M2M and IoT are same?

4. List the requirements of RFID protocols in IoT?

5. Define Raspberry PI.

6. Differentiate Raspberry with Arduino.

7. Give the characteristics of python?

8. What is python break statement?

9. What are tuples in Python?

10. List any four python package for IoT.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain in detail about IoT levels. And deployment templates.

Or

(b) Explain physical design in detail with an example.

12. (a) Explain the Key elements of Network function Virtualization for IoT.

Or

(b) Describe various features of a Raspberry Pi device.

13. (a) Illustrate with a neat sketch, about the architecture of NFV.

Or

(b) Describe how the IoT technology can be implemented in smart appliances.

14. (a) What are the different methods to insert values in the tuple?

Or

(b) Write a Python program to sum all the items in a dictionary.

15. (a) Explain the recursion procedure with the help of an example.

Or

(b) Discuss the following: (i) HTTPlib (ii) SMTPlib.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Analyse in Deployment templates in detail

17. Brief the IoT platform design methodology in detail.

18. Demonstrate the various operators in python.

19. Explain the different operations to be performed on the tuple.

20. Formulate how to Implement IoT with python.

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**D–4527**

| Sub. Code |
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| 31542 |

DISTANCE EDUCATION

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

Fourth Semester

ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define the term AI.

2. Mention any two application areas of AI.

3. How will you represent ISA relationships?

4. Compare forward vs backward reasoning.

5. Mention the constituents of soft computing.

6. What is called Hebb network?

7. List out the operations on Fuzzy set.

8. What do you mean by Defuzzification?

9. What are the elements of Genetic Algorithm?

10. Define the term Mutation.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain problem spaces and search state with suitable example.

Or

(b) Discuss about the problem reduction technique.

12. (a) How will you represent simple facts in predicate logic?

Or

(b) Write short notes on Declarative knowledge.

13. (a) Explain the characteristics of soft computing.

Or

(b) Explain the Learning process in ANN.

14. (a) Compare Crisp set vs Fuzzy set.

Or

(b) Write about Fuzzy equivalence and tolerance relation.

15. (a) What is Fitness function? How it is used in GA?

Or

(b) List and explain the applications of GA.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain Means end analysis.

17. Describe the various approaches in Knowledge representation.

18. Describe McCulloch pits model with neat sketch.

19. Discuss on Fuzzification

20. Explain the following Genetic operators:

    (a) Selection

    (b) Cross over

    (c) Inversion

    (d) Deletion.

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| D–4528 | Sub. Code |
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| | 31543 |

DISTANCE EDUCATION

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

Fourth Semester

BIG DATA ANALYTICS AND R PROGRAMMING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define the term OLTP.

2. Write down the types of Big Data.

3. What is called Mapper?

4. How Collaborative filtering used in real time applications?

5. What is the purpose of NoSQL?

6. What are the variations of NoSQL?

7. What is the main purpose of R programming script?

8. Write down the types of operators.

9. Define Vector in R.

10. What is meant by packages in R?

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short notes on characteristics of Big Data.

Or

(b) Explain about limitations of Hadoop.

12. (a) How to find similarity of documents? Explain briefly.

Or

(b) Briefly explain the usage of NoSQL Business Drivers.

13. (a) Differentiate SQL and NoSQL.

Or

(b) How do you count the given input words using MapReduce? Explain in detail.

14. (a) Describe the function components in R with examples.

Or

(b) Write down any five built-in functional and its usages with suitable script.

15. (a) Write down the steps to install, uninstall and load the package in R.

Or

(b) Explain about data reshaping. Give suitable example in R script.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain in detail about Core hadoop components.

17. Discuss about the features of NoSQL with case study.

18. Explain about mapreduce algorithm with proper example.

19. Discuss about the features of R and its environmental step up.

20. Explain in detail about merging two data frames two data frames in R with suitable script.

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**D–4529**

| Sub. Code |
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| 31544 |

DISTANCE EDUCATION

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

Fourth Semester

MOBILE APPLICATION DEVELOPMENT

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. What is called a cellular network?

2. What are the various types of wireless applications?

3. What are the uses of SMS?

4. Define a Mobile widget.

5. What is the term called click stream?

6. Define Prototyping.

7. Explain the benefits of J2ME.

8. Write about run time environment.

9. What is the advantages of Android OS?

10. Define Android AVD.

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) What are the attributes of mobile devices? Elaborate.

Or

(b) Write the challenges in mobile devices.

12. (a) Explain briefly on SMS Architecture.

Or

(b) Explain about Information apps.

13. (a) What are the types of site map, discuss?

Or

(b) How wire frames are used in developing mobile applications, explain?

14. (a) Elucidate about MIDlet Programming and its advantages.

Or

(b) Discuss about J2Me wireless toolkit.

15. (a) Write briefly on Android environmental development.

Or

(b) Differentiate between eclipse and emulator.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe in detail about the various types of Operating systems and OEM's used in smart phones.

17. Elaborate about Location based services.

18. Explain in detail about the elements of mobile design.

19. Enunciate in detail about J2ME Architecture.

20. Explain in detail about the various project framework.

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