D–7554

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022.

First Semester

Computer Application

DIGITAL COMPUTER ORGANIZATION

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. State the steps involved in Gray to binary conversion.

2. Subtract 111001_2 from 101011_2 using 2's complement method.

3. What is priority encoder?

4. Write the operations of RS flip flop.

5. What are computer registers?

6. Define the term Accumulator.

7. List any four peripheral devices.

8. Define the term shift register.

9.   What is read and write operation?

10. What is virtual memory?

PART B — (5 × 5 = 25 marks)

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

11. (a)   Describe the fundamental concepts of Boolean algebra.

Or

(b)   Write about Quine - McKluskey method.

12. (a)   With a neat sketch, explain Multiplexer.

Or

(b)   What is counter? Explain BCD counter.

13. (a)   Discuss on instruction codes.

Or

(b)   Give a brief account on memory reference instructions.

14. (a)   Briefly explain about stack organization.

Or

(b)   List and explain the various modes of transfer.

15. (a)   Write a note on auxiliary memory.

Or

(b)   Give a brief account on associative memory.

2   **D–7554**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Simplify the following boolean expression using K-map:

$F(A,B,C,D) = \Sigma(0,1,2,3,4,5,10,11,15)$

17. With a neat sketch, explain half adder and full adder.

18. Explain the various phases of instruction cycle.

19. Explain the DMA transfer with necessary diagrams.

20. Write detailed notes on cache memory.

_____

D–7554

D–7555

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022.

First Semester

Computer Application

OBJECT ORIENTED PROGRAMMING AND C++

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours　　　　　　　　　　Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1.　What is object oriented programming?

2.　What are input and output streams?

3.　Write the general form of a class definition.

4.　Write the format of a friend function.

5.　Define the term abstract class.

6.　What is the need for virtual function?

7.　What is the need for template function in C++? List its advantages?

8.　Write the general form of a class template with multiple parameters.

9. What are exceptions?

10. What is uncaught Exception?

PART B — (5 × 5 = 25 marks)

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

All questions carry equal marks.

11. (a) Write short notes on evolution of object oriented languages.

Or

(b) Briefly explain about various stream classes for console operations.

12. (a) Write a program to illustrate the use of objects as function arguments.

Or

(b) Write short notes on dynamic constructor. Illustrate with an example.

13. (a) Define the term inheritance. Explain multiple inheritance with an example.

Or

(b) Explain different types of type conversion with an example program.

14. (a) Describe various classes available for file operations.

Or

(b) Briefly explain about class template with an example.

2 **D–7555**

15. (a) Explain how to catch exceptions in base and derived classes. Give a suitable example.

Or

(b) How to catch exceptions in constructors? Explain with an example.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

All questions carry equal marks.

16. Discuss in detail about the basic concepts of object oriented programming.

17. What are the ways to define a member function? Explain with examples.

18. Explain briefly about operator overloading with suitable example.

19. How to handle data files? Explain with suitable example.

20. Explain the use of try, catch and throw exception handling keywords in C++. Illustrate them with an example program.

————————

D–7556		Sub. Code
		31513

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022.

First Semester

Computer Application

DATA STRUCTURE AND ALGORITHMS

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1.   Define the term Space Complexity.

2.   What do you mean by array?

3.   Write postfix form of the expression – A+B-C+D?

4.   How do you test for an empty queue?

5.   Define the term non-linear data structure.

6.   What is complete Binary Tree?

7.   What is meant by linear search?

8.   What are the advantages of using Binary search?

9.   Compare and contrast internal and external sorting.

10. What is the advantage of tree sorting method?

PART B — (5 × 5 = 25 marks)

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

All questions carry equal marks.

11. (a)   Define the term algorithm. Explain time complexity of an algorithm.

Or

(b)   Explain the following with suitable example:

(i)   Array initialization

(ii)   One dimensional Array

12. (a)   Explain the various applications of stack.

Or

(b)   Write short notes on merging lists.

13. (a)   Write short notes on hashing.

Or

(b)   Explain the different ways of representing a binary tree.

14. (a)   Write and explain non-recursive algorithm for binary search.

Or

(b)   Write an algorithm for linear search.

2   **D–7556**

15. (a) Explain Bubble Sort with illustrations.

                    Or

    (b) Write the algorithm for Insertion Sort. Explain with
        a suitable example.

           PART C — (3 × 10 = 30 marks)

           Answer any THREE questions.

           All questions carry equal marks.

16. Explain in detail about various types of data structure.

17. Explain in detail about doubly linked list.

18. Define binary search tree. Explain the various operations
    on it.

19. Discuss on various searching techniques.

20. Explain quick sort with a suitable example.

————————

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022.

First Semester

Computer Applications

DISCRETE MATHEMATICS

(CBCS 2020 – 2021 Academic Year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Write down the symbolic form of "If James takes Tamil and Ramesh takes English, then Ganesh will take mathematics.

2. Negate the statement "For all x, If $x > 4$,then $x^2 < 16$.

3. Give the matrix form of the relation R on the set A, where A=$\{a,b,c,d\}$. R =$\{(a,a),(a,b)(a,d),(b,c),(c,c),(c,d),(d,a)\}$.

4. Draw the Hasse diagram of $D_{20} = \{1,2,4,5,10,20\}$.

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

6. Define composite function.

7. Give an example of a group.

8. Define coset.

9. Give an example of a tree.

10. Define conditional probability.

PART B — (5 × 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) Draw the Hasse diagram of $\{P(A), \subseteq\}$, where $A = \{a, b, c\}$.

12. (a) Let $A = \{1, 2, 3, 4\}$ and $R = \{(1,2), (2,3), (3,3), (3,4), (4,2)\}$ be a relation defined on A find the transitive closure of R?

Or

(b) Let R denote a relation on the set of ordered pairs of positive integers such that if $f(x, y)$ $R(u, v)$ iff $xv = uy$. Then show that R is an equivalent relation.

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) Show that $\psi A \cap (B \cup C) = \psi (A \cap B) \cap (A \cap C)$.

2 D–7572

14. (a) Show that $G = \left\{ \begin{pmatrix} a & 0 \\ 0 & 0 \end{pmatrix}; a \neq 0 \in R \right\}$ is an abelian group under matrix multiplication.

Or

(b) Prove that the intersection of two normal subgroups is a normal subgroup.

15. (a) Prove that the maximum number of edges in a simple graph with n vertices is $\dfrac{n(n-1)}{2}$.

Or

(b) If A and B are two events such that $P(A+B) = \dfrac{3}{4}, P(AB) = \dfrac{1}{4}$ and $P(\overline{A}) = \dfrac{2}{3}$, find $P(B)$.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Find the PDNF of $(P \wedge Q) \vee (\rceil P \wedge R) \vee (Q \wedge R)$ and also find PCNF.

17. Let $A = \{1,2,3,4\}$ and $R = \{(1,2),(2,3),(3,3),(3,4),(4,2)\}$ be a relation defined on A. find the transitive closure of R?

18. List all possible functions from $X = \{a,b,c\}$ to $Y = \{0,1\}$ and indicate in each case whether the function is one-to-one is onto and is one-to-one and onto.

19. (a) Find all semigroup of (Z_6, x_6) where $Z_6 = \{[0],[1],[2],[3],[4],[5]\}$.

(b) Prove that a semi group homomorphism preserves idempotency.

3 | **D–7572**

20. In a bolt factory machines A,B and C manufacture respectively 25%, 35% and 40% of total output. also out of these output A,B,C 5%,4%,2% respectively are defective. A bolt is drawn at random from the total output its is found be defective. What is the probability that it was manufactured by the machine B?

_____

D–7572

D–7573

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022

Second Semester

ACCOUNTING AND FINANCIAL MANAGEMENT

(CBCS 2020 – 21 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Write a note on Ledger.

2. What is meant by cash flow analysis?

3. What do you mean by the term Accounting?

4. What is Trial Balance?

5. Mention any two objectives of Financial Accounting.

6. What is meant by suspense account?

7. Write a note on Time Value of money.

8. What is called debt?

9. Write a note on Standard Costing.

10. Define the term Break Even point.

PART B — (5 × 5 = 25 marks)

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

11. (a) Bring out the ultimate objectives of Financial Management.

Or

(b) Explain briefly the functions of Accounting.

12. (a) Describe the need of working capital in a business.

Or

(b) Explain briefly about the Double entry system of accounting.

13. (a) Give a brief account on the advantages of Financial Accounting.

Or

(b) Discuss the Concepts of Management Accounting.

14. (a) Brief on the advantages of Ratio analysis?

Or

(b) Explain briefly about the need and determinants of working capital for a business.

15. (a) What do you mean by Management Accounting?

Or

(b) Compute P/V ratio from the following data:

	Rs.
Total Sales	3, 60,000
Selling Price P.u.	100
Variable Cost P.u.	50
Fixed Cost	1, 00,000

D–7573

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the concepts and convections of accounting.

17. "Functional areas of Financial Management" - Elaborate.

18. Compare and Contrast between Cost, Financial and Management accounting.

19. From the following particulars taken from Raman & Co, prepare trading, Profit and loss account and balance sheet as on 31.03.2015.

S.No	Particulars	Debit Rs.	Credit Rs.
1	Capital		1,10,000
2	Bank	5,000	
3	Plant and Machinery	35,000	
4	Land and Building	42,000	
5	Debtors	11,500	
6	Cash	2,500	
7	Purchase and Sales	20,000	75,000
8	Purchase return and sales return	2,000	1,500
9	Bills receivable	1,500	
10	Bills payable		2,000
11	Wages	24,000	
12	Salaries	12,000	
13	Creditors		6,500
14	Discount		1,000
15	Stock on 01.04.2014	7,000	
16	Furniture	5,000	

3

D–7573

S.No	Particulars	Debit Rs.	Credit Rs.
17	Carriage inwards	1,000	
18	Carriage outwards	2,000	
19	Advertising	1,500	
20	Travelling expenses	500	
21	Loans		27,000
22	Van	50,000	
23	Telephone	500	
	Total	2,23,000	2,23,000

Adjustments:

(a)   Stocks on 31.03.2015 was valued at Rs. 15,000

(b)   Wages outstanding Rs. 1,000

(c)   Salaries prepaid Rs. 2,000

(d)   Provide depreciation on furniture by 10%

20.   From the following particulars, prepare Cost sheet:

Units produced	10,000
Material Cost (per unit)	30
Direct Labour (per unit)	5
Direct Expenses (per unit)	7
Factory Overheads (per unit)	2
Administrative Overheads	1,58,900
Selling and Distribution Overheads	1,28,625
Selling Price per unit	85

D–7573

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022.

Second Semester

Computer Application

RELATIONAL DATABASE MANAGEMENT SYSTEMS
(RDBMS)

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   Define the terms instance and schema.

2.   Expand the term DBA and write a note on it.

3.   What is SELECT operation?

4.   What is the use of rename operation?

5.   List the set operations in SQL.

6.   Write the desirable properties of decomposition.

7.   What are committed transaction and rollback?

8.   Why serializability is used?

9. What are block and a block number?

10. Define the term rotational latency time.

PART B — (5 × 5 = 25 marks)

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

11. (a) Compare Database system with file system.

Or

(b) Write short notes on query processor.

12. (a) Explain how DBMS enforces integrity constraints.

Or

(b) Describe join operations with an example.

13. (a) With examples, explain the use of group by and having clauses.

Or

(b) Illustrate multi valued dependency with an example.

14. (a) Give a brief account on ACID properties.

Or

(b) Discuss on log based recovery.

15. (a) Compare different file organizations.

Or

(b) Describe briefly about the term ISAM.

D–7558

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. What are ER diagrams? Write in detail about their components and its use with illustrations.

17. Discuss on Relational calculus.

18. Explain 2NF,3NF and 4NF through examples.

19. Describe Lock based protocol.

20. Explain B+ tree index in detail.

————————

D–7559	Sub. Code
	31523

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022.

Second Semester

Computer Application

COMPUTER GRAPHICS

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is the importance of computer graphics in education?

2. What are the two types of Graphics?

3. What are the four types of transformations?

4. What do you mean by the term clipping?

5. What are the different types of curves?

6. What do you understand by polygon rendering?

7. What is 3D transformation in Computer graphics?

8. Define the term 3D Shearing.

9. What is meant by frame buffer?

10. Define the term keyframing?

PART B — (5 × 5 = 25 marks)

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

11. (a)   Discuss briefly about the working procedure of Liquid crystal display.

Or

(b)   What are flood fill techniques? Explain the algorithmic steps with an example.

12. (a)   What is reflection? Explain with its types.

Or

(b)   What is text clipping? Explain with its structure.

13. (a)   Discuss on illumination models to calculate the intensity of light.

Or

(b)   What is phong shading? Explain.

14. (a)   Give a brief account on shear transformation of a 3D object.

Or

(b)   What is orthographic projection? Explain its types.

15. (a)   Discuss briefly about animation functions and explain how they are used?

Or

(b)   What are the computer animation languages? Explain.

2   **D–7559**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. What is midpoint circle drawing algorithm? Explain the steps with its structure.

17. Explain in detail about cohen Sutherland line clipping algorithm.

18. What are Bezier curves? List out its properties.

19. What is viewport transform? Explain with an example.

20. Discuss in detail about Z-buffer method with its structure.

————————

D–7574

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022

Second Semester

Computer Applications

VISUAL PROGRAMMING WITH .NET

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours　　　　　　　　　Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is meant by workspace in visual studio?

2. Write the uses of web project.

3. Write VB code to perform EB bill calculation using branching statements.

4. What is the use of "return" statement?

5. How to navigate the connection manager in Visual Studio?

6. Write the uses of class diagram?

7. Write about IntelliTrace?

8. Write the procedure to connect a visual studio project with external database.

9. Write a note on Grid Layout.

10. Why Web service is deployed with WCF?

PART B — (5 × 5 =25 marks)

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

11. (a) Explain briefly about Visual Studio navigation.

Or

(b) Make short notes on Visual Studio Windows management.

12. (a) Make an overview on VS code editor.

Or

(b) Write a program to display seven country names using abstract class inheritance.

13. (a) How to implement the interface? Explain.

Or

(b) Discuss in detail about Assembly Referencing.

14. (a) Explain Debugging Breakpoints through examples.

Or

(b) Write the procedure to create a student database application in VS.

15. (a) Explain the layouts for desktop application.

Or

(b) Elaborate on WCF service hosting.

D–7574

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Bring out the features of different visual studio project types.

17. Explain VB and C# Loop controls with illustrations.

18. How to compile the project in Visual Studio? Explain in detail.

19. "Working with data in Visual Studio" — Make a detailed discussion.

20. Explain in about working with Data in WPF.

———————

DISTANCE EDUCATION

M.C.A DEGREE EXAMINATION, DECEMBER 2022

Third Semester

Computer Applications

SOFTWARE ENGINEERING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   Define the term Software Engineering.

2.   What are the merits of incremental model?

3.   Write down the tasks of Requirement Engineering.

4.   Differentiate between flow-oriented modelling and class-based modelling.

5.   What are the components of data design?

6.   What are the golden rules of user interface design?

7.   What is the difference between unit testing and module testing?

8.   What are the various white box testing techniques?

9. What is risk refinement?

10. What activities are carried out in Formal technical reviews?

PART B — (5 × 5 = 25 marks)

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

11. (a) Write short notes on process patterns.

Or

(b) List the task regions in spiral model.

12. (a) List down the various tasks in Requirement Engineering.

Or

(b) Explain the objectives of analysis modelling.

13. (a) Discuss about software design concepts.

Or

(b) Explain about User Interface analysis and design.

14. (a) Explain Integration testing strategy.

Or

(b) Explain Black box testing technique with suitable example.

15. (a) Compare Reactive Vs Proactive risk strategies

Or

(b) Explain about statistical software quality assurance.

D–7575

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the Evolutionary Software process models.

17. Explain the building blocks of object oriented analysis.

18. Describe the architectural design and patterns.

19. Explain the following:

    (a) Validation testing

    (b) Debugging

20. Discuss about Risk projection and refinement.

————————————

D–7575

D–7561	Sub. Code
	31532/34032

DISTANCE EDUCATION

M.C.A./ M.C.A. (Lateral Entry) DEGREE EXAMINATION, DECEMBER 2022.

Third Semester

Computer Application

OPERATING SYSTEM

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is meant by the basic organizations of a computer system?

2. How does a kernel provide service to OS?

3. List out the different types of schedulers in OS.

4. What is the main purpose of locking scheme in a multiprocessor system?

5. What are the different types of Semaphores?

6. How deadlock can be prevented?

7. What is the difference between swapping and paging?

8. Why do we need segmentation in OS?

9. What is meant by mounting in OS?

10. List down different file allocation methods.

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe computer system organization with necessary diagrams.

Or

(b) What are system programs in OS? Explain.

12. (a) How does round robin scheduling algorithm works? Illustrate.

Or

(b) Discuss briefly about different scheduling criteria.

13. (a) What are the different types of classical problems that depicts flaws in synchronization? Explain.

Or

(b) Bring out the characteristics of deadlock.

14. (a) List out the advantages and disadvantages of contiguous memory allocation.

Or

(b) What are the advantages and disadvantages of segmentation? Explain.

15. (a) Discuss in brief about the structure of a file system with a neat diagram.

Or

(b) Write short notes on file protection.

D–7561

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. List out the common services provided by an OS. Explain each of them in detail.

17. How does a communication between two processes takes place with message passing method? Elaborate with its structure.

18. What are the two approaches to deadlock recovery? Discuss each with its structure.

19. Discuss in detail about Segmentation with neat sketch.

20. Explain in detail about free space management of files in OS.

————————

D–7576

DISTANCE EDUCATION

M.C.A DEGREE EXAMINATION, DECEMBER 2022

Third Semester

Master of Computer Applications

INTERNET AND JAVA PROGRAMMING

(CBCS 2020 – 21 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   List the methods in connecting to Internet.

2.   What is Telnet?

3.   Define the term JVM.

4.   Write a note on type conversion.

5.   List the inheritance types.

6.   What is Wrapper Class?

7.   What is meant by Runnable interface?

8.   How applets differ from console based applications?

9.   What are streams?

10. Write a note on Interactive input and Output stream classes.

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain in detail about anyone Internet search engine.

Or

(b) Give a brief account on Domain Name System (DNS).

12. (a) Discuss about the applications of Java.

Or

(b) What is an operator? illustrate the use of arithmetic and relational operators.

13. (a) Write a program using two dimensional arrays.

Or

(b) Write short notes on user defined packages.

14. (a) Describe the life cycle of a Thread.

Or

(b) Explain the steps involved in handling exceptions.

15. (a) Write a note on byte stream classes.

Or

(b) Discuss about File class.

2   **D–7576**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Elaborate on Usenet Newsgroup and internet Relay Chat (IRC).

17. Explain the branching statements available in Java.

18. Write in detail about interface.

19. List the components of a Graphics class.

20. Explain the steps in reading and writing characters to a file.

———————

3

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022.

Third Semester

Computer Applications

COMPUTER NETWORKS

(CBCS 2020 – 21 Academic Year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   What are the various transmission modes in computer networks?

2.   Differentiate between LAN and MAN.

3.   What is Framing?

4.   What is the function of ALOHA?

5.   What is message switching?

6.   Write down the merits of Dynamic routing.

7.   What is UDP?

8.   Expand the term DNS.

9.   Why do we need encryption?

10.   What is Asymmetric crytography?

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain Star topology with neat Sketch.

Or

(b) Discuss about Analog and Digital signals.

12. (a) Explain Flow and Error control mechanisms.

Or

(b) What is Selective – repeat ARQ? Explain.

13. (a) Compare Circuit switching and Packet switching.

Or

(b) Explain Link state routing technique.

14. (a) Explain process to process delivery mechanism of transport layer.

Or

(b) Explain the functions of SNMP.

15. (a) Discuss the model of transposition and substitution cipher.

Or

(b) Compare DES and AES algorithm.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss the various categories of computer network.

17. Explain about sliding window protocols.

2 **D–7577**

18. Explain congestion control algorithm.

19. Discuss on:

    (a) Connection oriented vs Connectionless service.

    (b) Remote Logon and Mail Exchange.

20. Discuss anyone Asymmetric Key cryptographic algorithm.

_____

D–7577

D–7578		Sub. Code
		31535

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022.

Third Semester

Computer Applications

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. Write down the difference between database and data warehouse.

2. Define the term KDD.

3. Give any two examples of association rules in data mining.

4. What is called pattern? Give an example.

5. Define the term k in k-means clustering.

6. What is called unsupervised learning in neural network?

7. Write down the uses of Web usage mining.

8. What is called Text clustering?

9. What is the purpose of Map reduce?

10. Expand and write a note on the term HDFS.

PART B — (5 × 5 = 25 marks)

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

11. (a)   Explain about data warehouse models.

Or

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

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

Or

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

13. (a)   Explain about any one method of partitioning algorithm with suitable example.

Or

(b)   Describe the types of learning methods.

14. (a)   Differentiate Web content mining from Web Structure Mining.

Or

(b)   Write an overview on spatial data mining.

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

Or

(b)   Explain about Volume, Velocity and Variety in Big data.

2   **D–7578**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss about the architecture of Data Warehousing with proper diagram.

17. Explain the steps in FP tree growth algorithm with suitable example.

18. Explain the steps in K means clustering algorithm with suitable example.

19. Bring out the importance of Text mining.

20. Why we need big data analytics? Discuss about traditional versus Big data approach.

————————

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   List out the IoT enabled technologies used in real life.

2.   What is the use of IoT Protocol?

3.   What is called ZigBee?

4.   What are called sensors and activators?

5.   List out few examples for the applications of IoT in home automation.

6.   What is called smart grid and mention its uses?

7.   What is the need for python programming in modern computing?

8.   Write about nested-if statement.

9.   How to access the elements in a list?

10.   What is meant by tuple() function?

PART B — (5 × 5 = 25 marks)

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

11. (a) Elaborate on communication API in IoT.

Or

(b) Discuss the functional blocks of IoT.

12. (a) Write any five differences between SDN and NFV.

Or

(b) Brief on the Importance and Need for IoT System management.

13. (a) Discuss about the Interfaces and Physical devices used in IoT Hardware.

Or

(b) Explain briefly about IoT Cloud and its storage methods.

14. (a) Explain the steps involved in installing python software.

Or

(b) Describe the functions and its syntax. List its uses.

15. (a) Discuss on JSON/XML and its uses.

Or

(b) Write short notes on SMTP Library.

D–7579

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain in detail about the physical and logical design of IoT.

17. Describe in detail about the communication modules in IoT components.

18. Discuss in detail about the applications of IoT in Data analytics and Health care systems.

19. Elaborate on string class and its built-in functions with suitable examples.

20. Explain about HTTP and URL Library packages in python.

—————————

D–7580

Sub. Code
31542

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022.

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 AI technique?

2. Write down the production system characteristics of AI.

3. Mention the different approaches in Knowledge representation.

4. Compare procedural vs declarative knowledge.

5. Differentiate between Hard and Soft computing.

6. Write down the fundamental concept of ANN.

7. Compare crisp set vs fuzzy set.

8. What is fuzzy composition?

9. What do you mean by fitness function?

10. Write down the purpose of cross over operator in GA.

PART B — (5 × 5 = 25 marks)

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

11. (a) List down the application areas of AI.

Or

(b) Explain Constraint satisfaction problem with suitable example.

12. (a) Write about Frame problem in knowledge representation.

Or

(b) How Instance and ISA relationships can be represented using predicate logic? Explain.

13. (a) Draw and explain the mathematical models of neuron.

Or

(b) Explain the Hebb rule training algorithm used in pattern association.

14. (a) Enlist various operations on fuzzy sets with their syntax.

Or

(b) Describe the limitations of fuzzy systems.

15. (a) What is fitness function? What is its role GA?

Or

(b) Explain the various application areas of GA.

D–7580

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the Best first search algorithm and explain its merits.

17. Explain the various methods for representing knowledge using rules.

18. Explain the various activation functions in NN.

19. Explain the membership functions in fuzzification and defuzzification.

20. Describe the classification of Genetic algorithm.

————————

D–7580

D–7581

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022.

Fourth Semester

Computer Applications

BIG DATA ANALYTICS AND R PROGRAMMING

(CBCS 2020-21 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   Write down the characteristics of Big Data.

2.   What is Hadoop?

3.   What do you mean by MapReduce?

4.   Why finding of similar items is important in Big Data?

5.   What is the purpose of NoSQL?

6.   What are the variations of NoSQL architectural patterns?

7.   Write any two features of R.

8.   Write down the syntax of if.. else statement in R.

9.   How to access array elements in R?

10. Write about melting and casting.

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe the various properties of Big Data.

Or

(b) Explain Core Hadoop components.

12. (a) Explain the concept of Map Reduce giving an example.

Or

(b) Explain Hamming distance measure with an example.

13. (a) Describe the architectural pattern of NoSQL data.

Or

(b) How NoSQL is used to manage Big Data? Explain.

14. (a) Discuss the essentials of R language.

Or

(b) Explain any five built in functions in R.

15. (a) How will you convert List to a vector? Explain with syntax.

Or

(b) Write down the procedure to install a new package and load it in library.

2   **D–7581**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the structure of HDFS in a Hadoop ecosystem using a diagram.

17. Discuss about the algorithms using MapReduce.

18. Describe characteristics of a NoSQL database.

19. Write a R script to generate Fibonacci series.

20. Explain factors and frames with syntax and example.

———————————

3   **D–7581**

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2022.

Fourth Semester

Computer Applications

MOBILE APPLICATION DEVELOPMENT

(CBCS 2020 – 21 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   What is called cellular operator?

2.   What are the various components of a mobile device?

3.   How mobile games are developed?

4.   Write about mobile websites.

5.   What are called site maps?

6.   List out few tools for mobile screen designing.

7.   Explain the uses of J2ME.

8.   Write about J2ME Wireless toolkit.

9.   What is the advantage of java eclipse?

10. Define the term emulator and write its use.

PART B — (5 × 5 = 25 marks)

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

11. (a) What are the various types of networks? Explain.

Or

(b) Write short notes on the types of mobile OS.

12. (a) Explain briefly about Location based services.

Or

(b) Explain about Enterprise apps.

13. (a) What are the types of prototyping? Discuss.

Or

(b) How click streams are used in developing mobile applications, explain?

14. (a) Elaborate on the needs of small computing device and its requirements.

Or

(b) Discuss about J2ME architecture.

15. (a) Discuss the pros and cons of Google Android.

Or

(b) Explain briefly about Android SDK.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe in detail about the mobile eco system.

17. Elaborate on Utility apps.

2   D–7582

18. Explain in detail about the mobile information architecture.

19. Explain in detail about MlDlet programming.

20. Explain in detail about Android AVD.

———————————

D–7582

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

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.

2   **D–2231**

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++?

————————————

3 **D–2231**

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.

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.

————————

D–2248

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 $(P \wedge Q) \rightarrow P$.

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 $f : R \rightarrow R+$ 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

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 $f(x) = e^x$ 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.

————————————

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.

4   **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.

2   **D–2234**

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

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 **D–2235**

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.

————————————

D–2250

DISTANCE EDUCATION

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

Third Semester

SOFTWARE ENGINEERING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

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.

———————

D–2237

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.

D–2252

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.

————————

D–2253

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.

————————

3 **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

————————

D-2255

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, DECEMBER 2023

Fourth Semester

INTERNET OF THINGS (IOT)

(CBCS 2020-21 Academic Year onwards)

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-2256

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.

2   **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.

_____

D–2257

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–6899	Sub. Code
	31511

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION.

MAY 2021 EXAMINATION

&

MAY 2020 ARREAR EXAMINATION

First Semester

Computer Application

DIGITAL COMPUTER ORGANIZATION

(CBCS 2018-19 Academic Year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   Subtract -72 from -50 using 2's complement method.

2.   Simplify Y=(A+B)(A+C')(B'+C').

3.   Define the term 'Half adder'.

4.   State the basic operation of a decoder.

5.   List the four phases of instruction cycle.

6.   Mention the purpose of accumulator and program counter.

7.   What is the need for interface between I/O device and CPU?

8.   Define the term peripherals. Mention its types.

9. What is the purpose of Main memory?

10. Write the uses of virtual memory.

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe the fundamentals of Boolean algebra.

Or

(b) Write short notes on Quine-Mckluskey method.

12. (a) Perform D to T flip-flop conversion.

Or

(b) Describe briefly about BCD counter.

13. (a) Brief on computer registers.

Or

(b) Draw and explain the design of basic computer.

14. (a) Write short notes on stack organization.

Or

(b) What is Direct Memory Access? Explain briefly.

15. (a) Discuss about associative memory.

Or

(b) Brief on memory management hardware.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Simplify the following Boolean function using K–map F
$F(w, x, y, z) = \sum m(0,1,2,4,5,6,8,9,12,13,14)$.

17. With neat block diagram, explain the operation of shift register.

18. Detail on different addressing modes.

19. Explain in detail about various addressing modes.

20. Discuss on cache mapping techniques.

————————————

D–6899

D–6900

Sub. Code
31512

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION.
MAY 2021 EXAMINATION
&
MAY 2020 ARREAR EXAMINATION

First Semester

OBJECT ORIENTED PROGRAMMING AND C++

(CBCS 2018-19 Aca. Year onwards & 2020-21 Aca.Year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1.   What is the need for streams?

2.   What is manipulator? Write two manipulators in C++.

3.   Define the terms class and object.

4.   What is 'this' pointer?

5.   How will you overload Unary and Binary operators using Friend function?

6.   What is an abstract class?

7.   Draw the hierarchy of file stream classes.

8.   List any two ios functions.

9.   What is meant by Exception?

10. Write the functions that handle uncaught exceptions.

PART B — (5 × 5 = 25 marks)

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

All questions carry equal marks.

11. (a) Briefly explain about object oriented programming paradigm.

Or

(b) Write short notes on formatted I/O.

12. (a) What do you mean by inline function? Explain with example code.

Or

(b) Explain copy constructor with suitable example.

13. (a) Describe Pure Virtual function with an example.

Or

(b) What is function overloading? Give an example.

14. (a) Explain with example how can a class template be created.

Or

(b) What is file? Write an example program for sequential access.

15. (a) Write short notes on catching exception. Give an example.

Or

(b) Write a program to throw exception from overloaded operator function.

2 **D–6900**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

All questions carry equal marks.

16. Describe the basic concepts of Object Oriented Programming.

17. Describe the concept of call by reference & return by reference with program code.

18. Define the term Inheritance. Explain multilevel and hierarchal inheritance with program code.

19. Explain the concept of function template with examples.

20. Explain the use of try, catch and throw for exception handling in C++ through examples.

—————————

D–6900

D–6901	Sub. Code
	31513

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION.

MAY 2021 EXAMINATION

&

MAY 2020 ARREAR EXAMINATION

First Semester

Computer Application

DATA STRUCTURE AND ALGORITHMS

(CBCS 2018-19 Aca.Year onwards & 2020-21 Aca.year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks.

1. Define the term data structure?

2. Define and write the characteristics of Algorithm.

3. What is a circular queue? Write the conditions of circular queue.

4. Differentiate between Array and Linked list.

5. What are ancestors and descendants?

6. What do you mean by the term Strictly Binary Tree?

7. State the applications of linear and binary search techniques.

8. What is the time complexity of binary search?

9. What is the best case time complexity of quick sort?

10. What is meant by external sorting?

PART B — (5 × 5 = 25 marks)

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

All questions carry equal marks.

11. (a) Explain briefly about various types of data structure.

Or

(b) How do you find the complexity of an algorithm? What is the relation between the time and space complexities of an algorithm? Justify your answer with an example.

12. (a) Explain the various applications of stack.

Or

(b) Convert the following Infix Expression to postfix using stack. A*B-(C+D)+E

13. (a) Explain the insertion and deletion operations of binary tree with example.

Or

(b) Write a recursive algorithm for binary tree traversal with an example.

14. (a) Compare working principle of binary search and linear search technique with example.

Or

(b) Write a program to search a number within a given set of numbers using binary search.

D–6901

15. (a) Explain tree sort technique with an example.

                    Or

    (b) Explain selection sort with illustration.

            PART C — (3 × 10 = 30 marks)

            Answer any THREE questions.

            All questions carry equal marks.

16. Define the term array. How are two-dimensional arrays represented in memory? Explain how address of an element is calculated in a two dimensional array.

17. Write an algorithm to perform the following operation on a doubly linked list.

    (a) Insert new node at the beginning of the list.

    (b) Insert new node at Middle.

    (c) Delete a node at middle and at last.

    (d) Count the number of nodes.

18. What is Hashing? Explain Different Hash function methods in detail.

19. Write short note on :

    (a) Linear search

    (b) Binary search.

20. Discuss on Bubble Sort with the help of an example.

————————————

D–6901

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION - MAY 2021

First Semester

Computer Application

DISCRETE MATHEMATICS

(CBCS 2020 – 21 Academic Year onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Construct the truth table for $\neg P \wedge \neg Q$.

2. Give the power set of $\{1, \emptyset\}$.

3. Show whether the relation $\{\langle 1,2 \rangle, \langle 2,3 \rangle, \langle 1,3 \rangle, \langle 1,2 \rangle\}$ is transitive.

4. Define equivalence relation with an example.

5. Find $\lceil -3.74 \rceil$ and $\lfloor -3.74 \rfloor$.

6. Let $f, g : \mathbb{R} \to \mathbb{R}$ defined by $f(x) = x^2 - 2$ and $g(x) = x + 4$. Find $f \circ g$.

7. Define permutation with an example.

8. What are the generators of $(\mathbb{Z}_6, +6)$?

9. Define digraph with an example.

10. If A and B are two indepedent events then $P(A \cap B) =$?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions Choosing either (a) or (b).

11. (a) Write an equivalent formula for

$P \wedge (Q \rightleftharpoons R) \vee (R \rightleftharpoons P)$ which does not contain the biconditional.

Or

(b) If $A = \{\alpha, \beta\}$ and $\{1,2,3\}$, what are $A \times B, B \times A, A \times A, B \times B$, and $(A \times B) \cap (B \times A)$?

12. (a) Let A = {a, b, c}. If R is the relation of proper inclusion on $\rho(A)$, then give the matrix of R.

Or

(b) Show that every equivalence relation on a set generates a unique partition of the set.

13. (a) Show that any function from a finite set to itself is one-to-one if and only if onto.

Or

(b) Show that $f(A \cap B) \subseteq f(A) \cap f(B)$. Under what condition will $f(A \cap B) = f(A) \cap f(B)$?

2   **D–7086**

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

Or

(b) Show that the kernal of every group homomorphism is a normal subgroup.

15. (a) Show that a simple graph is a tree if and only if it is connected, but the deletion of any of its edges produces a graph that is not connected.

Or

(b) If $f(x) = \begin{cases} k(2x+3) & if \ 0 \le x \le 2 \\ 0 & otherwise \end{cases}$ is the p.d.f. of the continuous random variable X. Find k and also find the distribution function $f(x)$.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Show that $(x)(P(x) \vee Q(x)) \Rightarrow (x)P(x) \vee (\exists x)Q(x)$.

17. Let $R = \{\langle 1,2 \rangle, \langle 3,4 \rangle, \langle 2,2 \rangle\}$ and

$S = \{\langle 4,2 \rangle, \langle 2,5 \rangle, \langle 3,1 \rangle, \langle 3,1 \rangle\}$. Find $R \circ S, S \circ R,$ $R \circ (S \circ R), (R \circ S) \circ R, R \circ R, S \circ S, R \circ R \circ R$.

18. If $f : X \to Y$ and $g : Y \to Z$ are bijective then show that $g \circ f$ is bijective and $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$.

19. Prove that every finite group of order n is isomorphic to a permutation group of degree n.

3   **D–7086**

20. One factory F_1 produces 1000 articles, 20 of them being defective, second factory F_2 produces 4000 articles, 40 of them being defective and third factory F_3 produces 5000 articles, 50 of them being defective. All these articles are put in one stock pile. One of them is chosen and found to be defective. What is the probability that it is from factory F_1.

————————

D–7086

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION - MAY 2021

Second Semester

Computer Application

ACCOUNTING AND FINANCIAL MANAGEMENT

(CBCS 2020–21 Academic Year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

All questions carry equal marks

1.   What is meant by business entity concept?

2.   What is a trial balance?

3.   What is acid test ratio?

4.   What is marginal costing?

5.   What is contribution?

6.   What is break-even chart?

7. What is standard costing?

8. What is a sales budget?

9. What is optimum capital structure?

10. What is stable dividend policy?

PART B — (5 × 5 = 25 marks)

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

All questions carry equal marks

11. (a) Mr. Raman has the following transactions in the month of July. Write journal entries and post them into the ledger:

Date		Particulars
July	1	Raman started business with a capital of Rs.75,000
	1	Purchased goods from Mohan on credit Rs.25,000
	2	Sold goods to Somu Rs.20,000
	3	Purchased goods from Ashok Rs.15,000
	6	Sold goods to Karthik for cash Rs. 16,000
	8	Goods returned to Mohan Rs.2,000
	11	Bought furniture for Rs. 15,000
	14	Cash paid to Mohan Rs.10,000
	15	Goods returned from Somu Rs.3,000
	16	Goods taken by Raman for domestic use Rs.3,000

D–7097

17   Bought machinery for Rs. 18,000

20   Cash sales Rs.15,000

31   Rent paid Rs.5,000

31   Salaries paid Rs.20,000

Or

(b)   State the managerial uses of ratio analysis.

12.   (a)   Distinguish between management accounting and cost accounting.

Or

(b)   Prepare a Cost Sheet showing Cost and Profit from the following information:

	Rs.
Materials purchased	2,00,000
Wages	1,00,000
Direct expenses	20,000
Opening stock of materials	40,000
Closing stock of materials	60,000

Factory overhead is absorbed at 20% on wages. Administration overhead is 25% on the works cost. Selling and administration overheads are 20% on the cost of production. Profit is 20% on sales.

3   **D–7097**

13. (a) You are required to prepare a production budget for the year ending June 2000 from the following information:

Product	Budgeted Sales quantity Units	Actual Stock on 31.12.1999 Units	Desired Stock on 30.6.2000 Units
S	20,000	4,000	5,000
T	50,000	6,000	10,000

Or

(b) Distinguish between standards and estimate.

14. (a) The following are the cash inflows and outflows of a certain project.

Year	Outflows	Inflows
0	1,75,000	–
1	5,50,000	35,000
2		45,000
3		65,000
4		85,000
5		50,000

The salvage value at the end of 5 years is Rs.50,000. Taking the cutoff rate as10%, calculate Net Present Value.

Year	1	2	3	4	5
P.V.	0.909	0.826	0.751	0.683	0.621

Or

(b) What is internal rate of return? What are its merits and demerits?

4   **D–7097**

15. (a) What is cost of capital? How overall cost of capital is calculated?

Or

(b) What are the assumptions of Walter's model?

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

All questions carry equal marks

16. The following are the summarized Balance Sheets of Malar Industries Ltd., as on 31st December 1989 and 1990:

Balance Sheet

Liabilities	1989 Rs.	1990 Rs.	Assets	1989 Rs.	1990 Rs.
Capital:			Fixed Assets	41,000	40,000
7% Redeemable	–	10,000	Less: Depreciation	11,000	15,000
preference shares				30,000	25,000
Equity shares	40,000	40,000	Current Assets:		
General reserve	2,000	2,000	Debtors	20,000	24,000
Profit & Loss a/c	1,000	1,200	Stock	30,000	35,000
Debentures	6,000	7,000	Prepaid expenses	300	500
Current Liabilities:			Cash	1,200	3,500
Creditors	12,000	11,000			
Provision for tax	3,000	4,200			
Proposed dividend	5,000	5,800			
Bank overdraft	12,500	6,800			
	81,500	88,000		81,500	88,000

5   **D–7097**

Prepare:

(a) Statement showing changes in working capital

(b) A Statement of Sources and Application of Funds

17. From the following information

	Rs.
Present Sales	1,00,000
Variable Cost	60,000
Fixed Cost	20,000

Ascertain the effect of 10% reduction of selling price on:

(a) P/V Ratio

(b) Break Even Point

Also calculate the Sales required to maintain the Profit at the present level.

18. Prepare a flexible budget for overheads on the basis of the following data. Ascertain overhead rates at 50%, 60% and 70% capacity.

	At 60% Capacity Rs.
Variable overheads:	
Indirect material	6,000
Indirect labour	18,000
Semi-variable Overheads:	
Electricity (40% fixed, 60% variable)	30,000
Repairs (80% fixed, 20% variable)	3,000

D–7097

Fixed Overheads:

Depreciation		16,500
Insurance		4,500
Salaries		15,000
Total overheads		93,000
Estimated direct labour hours		1,86,000

19. Critically explain the factors affecting the requirement of working capital.

20. Describe the factors affecting dividend policy.

————————

D–7097

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION.
MAY 2021 EXAMINATION
&
MAY 2020 ARREAR EXAMINATION

Second Semester

Computer Applications

RELATIONAL DATABASE MANAGEMENT SYSTEMS
(RDBMS)

(CBCS 2018-19 Aca.Year onwards & 2020-21 Aca.Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   Expand and write the purpose of the term DBMS.

2.   Give the levels of data abstraction.

3.   What is candidate key?

4.   Write the use of rename operation.

5.   What is trigger?

6.   List out the desirable properties of decomposition.

7.   What are the properties of transaction?

8.   What are the types of serializabilty?

9.   What are called secondary indices?

10. Define the term search key.

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

11. (a) Discuss the role of DBA and different database end users.

Or

(b) Write short notes on various types of attributes in ER model.

12. (a) Discuss on tuple relational calculus

Or

(b) Give a note on domain relational calculus.

13. (a) Define BCNF. How does it differ from 3NF?

Or

(b) Brief on functional dependency concepts.

14. (a) Write short notes on concurrency.

Or

(b) Describe the timestamp based protocols.

15. (a) Give a note on comparison of file organizations.

Or

(b) Briefly explain about ISAM.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. With a neat diagram, explain the structure of DBMS.

17. Explain various integrity constraints giving examples.

D–6903

18. Explain five SQL commands and their use, through examples.

19. Discuss on recovery and atomicity.

20. Explain B+ tree indexing.

_____

3

D–6904	Sub. Code
	31523

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION.

MAY 2021 EXAMINATION

&

MAY 2020 ARREAR EXAMINATION

Second Semester

Computer Applications

COMPUTER GRAPHICS

(CBCS 2018-19 Aca.Year onwards & 2020-21 Aca.Year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1.   What is Computer graphics?

2.   Write any two characteristics of video display devices.

3.   Why we do rotation in computer graphics?

4.   What is two dimensional computer graphics?

5.   What is space partitioning representation in computer graphics?

6.   What are the three different classification of curves?

7.   What is called a shear in 3d Geometric transformation?

8.   What are the three types of orthographic projection?

9. What are the two approaches to remove hidden surface problem?

10. What is the purpose of frame buffer method?

PART B — (5 × 5 = 25 marks)

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

11. (a) Briefly discuss about cathode ray tube with a neat sketch.

Or

(b) Write short notes on flood fill algorithm.

12. (a) Elaborate on the translation operation with necessary diagrams and matrix.

Or

(b) What is text clipping? Explain with a neat diagram.

13. (a) Bring out the advantages and disadvantages of polygon meshes.

Or

(b) Write short notes on the following:

(i) Explicit curves,

(ii) Parametric curves.

14. (a) What is reflection? Explain with a neat structure.

Or

(b) What are the two basic projection methods? Explain.

D–6904

15. (a) Explain briefly about the area sub division method with its diagram.

Or

(b) Write short notes on A- buffer method.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write and explain in detail about the DDA line drawing algorithm.

17. Elaborate in detail the cohen-sutherland line clipping algorithm with a neat diagram.

18. List out the properties of B-Spline curves with a neat structure.

19. Discuss in detail about polygon clipping with a neat structure.

20. Describe in detail about the different types of animation techniques with illustrations.

————————————

D–7098	Sub. Code
	31524

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION - MAY 2021

Second Semester

VISUAL PROGRAMMING WITH .NET

(CBCS 2020–21 Academic Year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is called as work area in visual studio?

2. What is the use of Toolbar?

3. List the branching statements in VB.Net.

4. What is inheritance? Write the use of class inheritance.

5. What is meant by interface snippet?

6. Write the use of solution explorer.

7. What is the purpose of Watch window?

8. How the tables are connected through foreign keys?

9. Write the procedure to connect the combo box with data source.

10. What is called as Web service?

PART B — (5 × 5 = 25 marks)

Answer ALL questions. Choosing either (a) or (b).

11. (a) Explain Solution Explorer and Status bar in Visual Studio.

Or

(b) Discuss about windows projects and web protects.

12. (a) Write an overview on Visual Studio code editor.

Or

(b) Write a program to display names of 10 fruits using abstract class inheritance.

13. (a) Explain the procedure to apply array and generic in visual studio.

Or

(b) Brief on Assembly Referencing.

14. (a) Explain the debugging techniques in visual studio.

Or

(b) Write the procedure to create student database application in VS.

D–7098

15. (a) Discuss in detail about Managing windows for controls.

Or

(b) Discuss in detail about WCF service hosting.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain the visual studio 2010 environments.

17. How to write and use methods in VB.Net? Explain.

18. Detail on Project Compilation in Visual Studio.

19. Elaborate on Application state inspection.

20. Explain the step by step procedure to build the desktop application with WPF.

————————

D–7098

D–5551

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

First Semester

DIGITAL COMPUTER ORGANIZATION

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   Convert 22.64_{10} to hexadecimal number.

2.   What are called don't care conditions?

3.   Write the truth table of half adder.

4.   Define the term throughput.

5.   Mention the phases of instruction cycle.

6.   Write the memory reference instructions

7.   What are peripherals?

8.   What is stack organization?

9.   Define the term bus.

10. Write the purpose of cache memory.

PART B — (5 × 5 = 25 marks)

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

11. (a) Discuss the use of complements with example.

Or

(b) State and explain DeMorgan's theorem.

12. (a) Give a note on D and T flip flop.

Or

(b) Write about error detection codes.

13. (a) Explain the basic instruction types with example.

Or

(b) Write the steps taken when an interrupt occurs.

14. (a) Describe the general register organization.

Or

(b) With a neat sketch, explain IOP.

15. (a) Describe the need for secondary storage devices.

Or

(b) Write about memory management hardware.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Reduce the following boolean expression using K-map:

$F (A, B, C, D) = \sum (2,3, 4, 5, 6,7,8,10,11)$

17. Explain Floating point representation with examples.

D–5551

18. Discuss about the design of computer.

19. What do you mean by addressing modes? Explain various addressing modes.

20. Write a detailed notes on virtual memory.

_____

D–5551

D–5552

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

First Semester

OBJECT ORIENTED PROGRAMMING AND C++

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. What are input and output streams?

2. List any two I/O Manipulators and state their purpose.

3. Write a C++ code to swap two numbers using pointer?

4. Define the term private member function.

5. State the rules for operator overloading.

6. What are the characteristics of abstract class?

7. What is the main reason of using templates in C++?

8. What are the functions that the file stream class provides?

9. Mention any three exceptions with description.

10. Write the syntax of re-throwing exceptions.

PART B — (5 × 5 = 25 marks)

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

11. (a) Differentiate between procedure oriented and object oriented programming.

Or

(b) Explain various unformatted I/O operations.

12. (a) Write a C++ program to calculate the sum of given distances in meter and centimeter and display the results using friend function.

Or

(b) How to define a member function inside and outside the class? Explain with examples.

13. (a) Write short notes on pure virtual function. Give an example.

Or

(b) Write C++ program to add two complex numbers using overloaded "+" operator.

14. (a) Write a program to count number of occurrences of particular character in text file.

Or

(b) Write a C++ program to illustrate class template with multiple parameters.

15. (a) Write a C++ program for exceptions handling in constructors and destructors.

Or

(b) Explain how to handle exception in inheritance tree with appropriate example.

2 **D–5552**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Describe in detail about the basic concepts of object oriented programming.

17. Explain various types of constructors with suitable example program.

18. Explain different types of inheritance with block diagram and example.

19. Explain the functions to perform open, close, read and write operation on files.

20. What are the various ways of handling exceptions? When do we use multi-catch handlers? Explain with an example.

————————

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

First Semester

DATA STRUCTURE AND ALGORITHMS

(CBCS 2018 /2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   What are the characteristics of an Array?

2.   Define the term space complexity.

3.   List the applications of stack.

4.   What is the need for header file?

5.   Define the term Binary Tree.

6.   List out various techniques of hashing.

7.   What is meant by searching?

8.   Define the term binary search.

9.   State the logic of Tree sort algorithm.

10.   Compare quick sort and selection sort.

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain two-dimensional array. How two dimensional arrays are represented in memory?

Or

(b) Write short notes on time complexity of an algorithm.

12. (a) Write an algorithm for inserting and deleting an element from linked list. Explain with examples.

Or

(b) Write short notes on circular queue. Compare it with linear queue.

13. (a) Write algorithms to perform insert and delete operations on binary tree and explain them with examples.

Or

(b) Explain the various tree traversals and predict a binary tree with preorder: ABCDEFGHI & Inorder: BCAEDGHFI.

14. (a) Explain the algorithm of Binary search. Illustrate with an example.

Or

(b) Consider the following elements in an Array:

11 10 9 7 6 3 2 1

Apply Binary search for element 11 and discuss each step.

2   **D–5553**

15. (a) Sort the following data in ascending order using Bubble sort:

9,3,11,6,5,10,7

Or

(b) Write an algorithm to implement radix sort with suitable example.

PART C — (3 × 10 = 30 marks)

16. Explain in detail about various types of data structure.

17. Write an algorithm for postfix expression, evaluate it and show the contents of stack for the following postfix expression:

623+-382/+*2$3+

18. Elaborate on various types of binary tree with suitable examples.

19. Derive the best, average, worst case time complexity of a linear search.

20. The initial content of an array is given as 25,57,48,37,12,92,86,33. Write and illustrate the quick sort algorithm to order the elements and explain its efficiency in sorting.

————————————

3

D–5569

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

First Semester

DISCRETE MATHEMATICS

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. State the truth value of "If tiger have wings then the earth travels around the sun".

2. If $A = \{1, 4, 6\}$ and $B = \{2, 4, 5\}$. Find $A – B$ and $B – A$.

3. Let $X = \{1, 2, 3, 4\}$ and $R = \{(x, y)/x < y\}$ Draw the graph of R.

4. Define poset.

5. Define one-one function and give an example.

6. Prove that $\psi_{A \cap B}(x) = \psi_A(x).\psi_B(x)$.

7. Give an example of a Group.

8. Define Normal subgroup.

9. Give an example of a tree with 6 vertices.

10. State Baye's theorem.

PART B — (5 × 5 = 25 marks)

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

11. (a) Construct the truth table for $\rceil(P \vee Q) \wedge (P \vee R)$.

Or

   (b) Show that

   $$(x)(P(x) \to Q(x)) \wedge (x)(Q(x) \to R(x)) \Rightarrow (x)(P(x) \to R(x))$$

12. (a) Let R be the relation represented by the matrix
   $M_R = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 1 & 0 \\ 1 & 0 & 1 \end{bmatrix}$. Find the matrix representing for
   the following.

   (i) R^{-1} (ii) $\overline{R}$ (iii) R^2.

Or

   (b) Let m be a positive integer greater than 1. Show
   that the relation $R = \{(a, b) \mid a \equiv b(\mod m)\}$ is an
   equivalence relation on the set integers.

13. (a) Prove that the composite of two one-one and onto
   functions is also a one-one and onto functions.

Or

   (b) If $f = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 3 & 2 & 1 & 4 \end{pmatrix}$ and $g = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 3 & 4 & 1 \end{pmatrix}$ are

   permutations, prove that $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$.

2

14. (a) Find all semigroup of (Z_6, X_6) where $Z_6 = \{[0],[1],[2],[3],[4],[5]\}$.

Or

(b) Prove that the intersection of two normal subgroup of a group is a subgroup of G.

15. (a) Prove that the number of odd degree vertices is always even.

Or

(b) A bag contains 5 red and 3 green balls and a second bag 4 red and 5 green balls. One of the bags is selected at random and a draw of 2 balls is made from it. What is the probability that one of them is red and the other is green?

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. In a survey of 100 students, it was found that 40 studied Mathematics, 64 studied Physics, 35 studied Chemistry, 1 studied all the three subjects, 25 studied Mathematics and Physics, 3 studied Mathematics and Chemistry and 20 studied Physics and Chemistry. Find the number of students who studied Chemistry only and the number who studied none of these subjects.

17. Let R and S are equivalence relations on X, Show that $R \cap S$ is also equivalent? Whether $R \cup S$ is also an equivalent relation? If not give and example.

3 **D–5569**

18. List all possible functions from $X = \{a, b, c\}$ to $Y = \{0,1\}$ and indicate in each case whether the function is one-to- one is onto and is one-to-one and onto.

19. State and prove Lagranges theorem.

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

_____

4   D–5569

D–5570		Sub. Code
		31521

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

Second Semester

ACCOUNTING AND FINANCIAL MANAGEMENT

(CBCS 2020 – 21 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is meant by ratio?

2. What do you mean by 'going concern' concept?

3. List out different types of Errors

4. What is meant by dividend policy?

5. Write a note on Quick ratio.

6. Define the concept of Realization.

7. What is break even point?

8. What is working capital?

9. What do you mean by Factoring?

10. Define the concept of Business Entity.

PART B — (5 × 5 = 25 marks)

Answer ALL questions. Choosing either (a) or (b).

11. (a) Explain briefly about the advantages of Accounting.

Or

(b) Brief on 'Financial management'.

12. (a) Explain the Limitations of Ratio analysis.

Or

(b) What do you mean by working capital? Explain briefly.

13. (a) What is costing? Explain the nature and importance of costing.

Or

(b) What is Capital Structure? Explain in detail the different factors affecting capital structure?

14. (a) Brief on the Objectives of Financial Management.

Or

(b) A firm sells 7000 units at Rs. 27/unit. Its fixed cost amounts to Rs. 44,000 and variable cost to Rs. 16 per unit. You are required to find out:

(i) The break even point

(ii) Profit volume (P/V) ratio

15. (a) Explain briefly about various types of dividend policies.

Or

(b) Explain in detail the following terms:

(i) Current Assets

(ii) Current Liabilities

2   **D–5570**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain in detail about Ledger and the need for its preparation.

17. Compare and contrast Cost accounting and Management accounting

18. Explain the determinants of working capital.

19. From the following trial balance of Mr. Arun, prepare a trading and Profit and Loss account for the year ending 31.12.2016 and a balance sheet as on that date:

Particulars	Debit (Rs.)	Credit (Rs.)
Capital		24,000
Drawings	4,500	
Purchases	20,000	
Sales		30,500
Stock (01-01-2016)	8,000	
Returns inwards	1,500	
Salary	4,200	
Wages	1,200	
Kent	350	
Bad debts	400	
Discounts	700	1,900
Sundry Debtors	14,000	
Sundry Creditors		10,000
Cash in hand	6,200	
Insurance	700	
Printing	150	
Furniture	2,000	
Machinery	5,000	
Bills payable		2,500
	68,900	68,900

3   **D–5570**

Adjustment:

(a) Closing Stock was valued at Rs.7,000

(b) Insurance was prepaid to the extent of Rs.60

(c) Outstanding liabilities were: Salary Rs.200, Wages Rs.200

(d) Make provision for doubtful debts at 5% on sundry debtors

(e) Calculate interest on capital 5% pa.

(f) Depreciate machinery at 5% and furniture at 10%

(g) Provide for discount on creditors at 1%.

20. From the following information, calculate

(a) Debt equity ratio

(b) Interest coverage ratio

(c) Debt on total fund ratio

(d) Return on investment

(e) Capital turnover ratio

Information

	Rs.
Share Capital	160000
General reverse	60000
Profit and Loss account	100000
Loan at 15% interest	200000
Sales for the year	560000
Tax paid during the year	40000

Profit for the current year after interest and tax: 80,000

———————

D–5570

D–5555	Sub. Code
	31522

DISTANCE EDUCATION

MCA DEGREE EXAMINATION, MAY 2022.

Second Semester

RELATIONAL DATABASE MANAGEMENT SYSTEM

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1.   Define the term database management system.

2.   What is relationship set?

3.   Why the join operation is given a special attention?

4.   List the set operations.

5.   What is meant by 'subquery'?

6.   How are primary keys related to FDs?

7.   What is a serializable scheule?

8.   Define the term log.

9.   What is the relationship between files and indexes?

10. Write the order of B+ tree.

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe the levels of abstraction in a DBMS.

Or

(b) Explain entities, attributes and entity sets with examples.

12. (a) What are integrity constraints? How are these constraints expressed in SQL?

Or

(b) Describe the selection operation.

13. (a) Write and explain the form of a basic SQL query?

Or

(b) Give a brief account on minimal cover for a set of FDs.

14. (a) Discuss on serializable schedule.

Or

(b) How is the log used in transaction rollback and crash recovery?

15. (a) Compare the features of different file organizations?

Or

(b) Write about ISAM methods.

D–5555

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain database system structure with a neat sketch.

17. Relational algebra and relational calculus are said to be equivalent in expressive power. Explain what this means and how it is related to the notion of relational completeness?

18. What is normalization? Explain various normal forms.

19. Discuss about lock based protocols.

20. Explain about B+ trees.

———————————

D–5556

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

Second Semester

COMPUTER GRAPHICS

(CBCS 2018/2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. What are the elements of computer graphics?

2. List any two line drawing algorithms in computer graphics.

3. What do you mean by transformation?

4. What is   2D rotation?

5. What do you mean by polygon surface?

6. What for Bezier curves are used?

7. List down the type of 3D transformations?

8. What is meant by 3D rotation?

9. Write a note on the term visible surface detection.

10. Why do we use Z buffer?

PART B — (5 × 5 = 25 marks)

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

11. (a) List out the applications of computer graphics.

Or

(b) What is boundary filling in OS? Illustrate the steps in the algorithm.

12. (a) How to translate a point from one coordinate position to another? Explain.

Or

(b) Discuss briefly about the 2D shearing transformation of object with necessary diagram.

13. (a) What is a curve? Explain its types.

Or

(b) List out the properties of B-Spline curves.

14. (a) Write short notes on 3D scaling.

Or

(b) What is parallel projection? Explain with its structure.

15. (a) Discuss briefly about depth sorting.

Or

(b) Write down the steps to perform insertion in octrees with example.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain with a neat structure the working principle of cathode ray tube.

17. What is composite transformation? Explain with its structure.

2 **D–5556**

18. What is Gouraud shading? Explain with its structure.

19. Discuss in detail the following :

    (a) Oblique projection

    (b) Isometric projection.

20. Explain in detail about back face detection method with an example.

———————

DISTANCE EDUCATION

MCA DEGREE EXAMINATION, MAY 2022.

Second Semester

VISUAL PROGRAMMING WITH .NET

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. What is visual studio?

2. How do windows project differs from web project?

3. What is the use of 'enum' data type?

4. Differentiate between class snippet and property snippet.

5. What is the use of interface?

6. How to change the targe framework in visual studio?

7. Writ the uses of auto window and watch window.

8. How to create a foreign key constraint in visual studio?

9. What is the use of XAML in WPF?

10. List the advantages of MVC.

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the visual studio components: Menu, Toolbox and work area.

Or

(b) Explain the elements of solution explorer and status bar in visual studio.

12. (a) Make short notes on code skeleton.

Or

(b) How to create a VB.Net class? Explain with an example.

13. (a) Explain about arrays and generics.

Or

(b) Explain all about project compilation.

14. (a) Discuss in detail about application state inspection.

Or

(b) Write the procedure to create an employee database application in VS.

15. (a) Elaborate on layouts.

Or

(b) Explain the procedures to use WPF controls.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Describe the features of visual studio project types.

17. Explain the creation and use of methods in VB.Net.

D–5571

18. Explain the procedure to examine the property settings.

19. Detail on application state inspection.

20. Narrate the process of designing silver light application. Illustrate.

_____

D–5571

D–5572

DISTANCE EDUCATION

MCA DEGREE EXAMINATION, MAY 2022.

Third Semester

SOFTWARE ENGINEERING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. What is the role of a software?

2. What are the merits of incremental model?

3. What are called validating requirements?

4. What is behavioural model?

5. What are the components of architectural design?

6. What is design evaluation?

7. What is regression testing?

8. What are software product metrics?

9. How risks are identified?

10. What is formal technical review?

PART B — (5 × 5 = 25 marks)

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

11. (a) Briefly explain the process framework.

Or

(b) Explain waterfall model with neat sketch.

12. (a) Write about requirement engineering design and construction.

Or

(b) Explain Scenario based modeling.

13. (a) Describe the system design model with neat sketch.

Or

(b) List and explain the golden rules of user interface design.

14. (a) Compare and contrast testing and debugging.

Or

(b) Explain the need for system testing and validation testing.

15. (a) Explain RMMM plan.

Or

(b) Write about ISO 9000 quality standards.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Describe the incremental process models.

17. Explain the building blocks of object-oriented analysis.

D–5572

18. Describe the user interface analysis and design.

19. Explain the testing strategies for object-oriented software.

20. Explain the various risk strategies.

————————

3

DISTANCE EDUCATION

M.C.A./M.C.A. (LATERAL ENTRY) DEGREE
EXAMINATION, MAY 2022.

Third Semester

OPERATING SYSTEM

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1.   What is an operating system? Give examples.

2.   What is a trap? How it was generated?

3.   What are the different types of process scheduling
     queues?

4.   What is the best scheduling algorithm in OS?

5.   What are the two functions that control critical section?

6.   List out the different methods for handling deadlocks.

7.   Why do we need swapping operation in OS?

8.   What are the types of contiguous memory allocation?

9.   What are the different types of files in OS?

10. What are the types of file sharing in OS?

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain in brief about the category of layered operating system structure that maintains modularity and robustness.

Or

(b) What are the major operations of OS? Explain with its structure.

12. (a) How does a connection between two processes takes place with shared memory method? Explain with its structure.

Or

(b) What is load balancing in OS? Discuss its types.

13. (a) What are called monitors in OS? Explain with an example.

Or

(b) Explain with an example the ways to prevent deadlock.

14. (a) Discuss briefly about contiguous memory allocation with its structure.

Or

(b) What is paging? Briefly explain its working procedure.

15. (a) What is mounting in OS? Discuss about file system mounting.

Or

(b) Elaborate on the process of file sharing in OS.

D–5558

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. What are the important functions of OS? Explain each function in detail.

17. What are the different operations that can be performed on a process? Explain each operation with its structure.

18. Elaborate in detail about the solution to the critical section problem using hardware synchronization.

19. What do you mean by non-contiguous memory allocation? Explain with its structure.

20. Describe in detail about various file allocation methods.

———————

D–5558

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

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.   List out the features of Email.

2.   Write the methods used to connect to internet?

3.   Define the term JVM.

4.   Write the syntax of nested if else statement.

5.   What is meant by enumerated types?

6.   What is the use of last index of() method?

7.   Define the term Runnable interface.

8.   Distinguish between errors and exceptions.

9.   Write an example for using stream classes in file handling.

10. What is the job of Buffered writer class?

PART B — (5 × 5 = 25 marks)

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

11. (a) Brief on web browsers.

Or

(b) Discuss about internet relay chat.

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

Or

(b) Write a java program to check the given year is leap year or not.

13. (a) Explain about two dimensional array in java.

Or

(b) Describe the benefit of user defined packages in java.

14. (a) What is the advantage of extending thread class? Explain.

Or

(b) Illustrate user defined exception with an example.

15. (a) Give a brief account on byte stream classes.

Or

(b) How to write a character to a file? Explain with complete program.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain about domain name system.

17. Explain in detail about operators in java with suitable examples.

2   **D–5573**

18. Discuss about string handling functions.

19. Write in detail about graphic methods in java. Explain any two with examples.

20. Explain the way of handling I/O exceptions in file operations.

———————————

D–5573

D–5574		**Sub. Code**
		31534

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

Third Semester

COMPUTER NETWORKS

(CBCS 2020 – 21 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1.   What are the two types of transmission technology available?

2.   Which OSI layers are the network support layers?

3.   What is block coding?

4.   What are called multiple access protocols?

5.   Differentiate between circuit switching and packet switching.

6.   Write down the merits of Hierarchical routing.

7.   Expand the terms TCP and UDP.

8.   What is called remote login?

9.   Define the term cryptography.

10.   What is the function of substitution cipher?

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b) in each.

11. (a) Compare the functions of LAN, MAN and WAN networks.

Or

(b) Explain the various transmission media.

12. (a) Write about Cyclic Redundancy Check.

Or

(b) Explain about CSMA/CD.

13. (a) Write short notes on Datagram subnets.

Or

(b) Explain Multicast routing technique.

14. (a) List and explain the services of transport layer.

Or

(b) Write about Remote procedure call and remote file access.

15. (a) Explain the encryption model in cryptography.

Or

(b) Explain DES algorithm.

PART C— (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain OSI reference model with neat sketch and describe the functions of each layer.

17. Explain about sliding window protocols.

D–5574

18. Explain the following routing algorithms:

    (a) Dynamic routing

    (b) Link state routing

19. Discuss on:

    (a) File transfer

    (b) SNMP

20. Explain RSA algorithm in Asymmetric cryptography.

———————————

D–5574

D–5575

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

Third Semester

DATAMINING AND WAREHOUSING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. List out the types of OLAP operations.

2. What is meant by missing values in data mining?

3. What is classification in data mining?

4. What is meant by Bayesian classifier?

5. Expand the terms DBSCAN, CLARANS, ROCK, CACTUS.

6. What is the difference between human learning and machine learning?

7. List out some tools for visual data mining.

8. What is meant by information retrieval?

9. Expand and write a note on the terms V V V in Bigdata.

10. What is meant by Bigdata?

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Write short notes on measures of similarity.

Or

(b) Explain about the OLAP operations.

12. (a) How does association rules work in data mining? Explain.

Or

(b) Write short notes on Decision tree induction.

13. (a) Explain briefly about Genetic Algorithm.

Or

(b) Write short notes on Supervised learning with suitable example.

14. (a) How concept of visual data mining differs from text data mining. Explain briefly.

Or

(b) Explain the use of Web usage mining with an example.

15. (a) Why Big data analytics is so important?

Or

(b) Give a brief account on the features of Hadoop.

2   **D–5575**

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the steps in Market basket analysis with suitable example.

17. Discuss on data pre-processing methods in data mining.

18. Discuss in detail about Genetic algorithm concepts.

19. Explain in detail about various types of Web mining.

20. Explain about core components of Hadoop and its applications.

————————

D–5575

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

Fourth Semester

INTERNET OF THINGS (IOT)

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define the term IoT.

2. Write a note on communication API.

3. What is called IoT system management?

4. Define the term SDN.

5. How hardware helps in IoT Platforms?

6. What are the interfaces used in IoT Hardware?

7. What is a Data type?

8. Write the basic use of Python Programming.

9. Define a list in python.

10. Define the term tuple.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Elaborate on the Challenges in IoT.

Or

(b) Discuss the characteristics of IoT.

12. (a) Write any five differences between IoT and M2M.

Or

(b) Brief on the components in IoT design methodology.

13. (a) Discuss about the types of hardware devices used in IoT platforms.

Or

(b) Differentiate between Arduino and Raspberry pi.

14. (a) Explain the advantages and disadvantage of Python Programming.

Or

(b) Describe the Python character set and expressions.

15. (a) List and explain the built-in functions for lists with few examples.

Or

(b) Write short notes on indexing and slicing.

D–5576

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain in detail about the IoT Eco system.

17. Describe in detail about Integration and Application development in IoT Design methodology.

18. Discuss in detail about the IoT tools used for its effective applications.

19. Elaborate the decision and control statements used in python programming with proper examples.

20. Discuss with relevant examples about sorting and traversing.

————————

3   **D–5576**

D–5577

Sub. Code
31542

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

Fourth Semester

ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   Define the term Artificial Intelligence.

2.   What is called problem space?

3.   Name the various approaches in knowledge representation.

4.   Compare forward vs backward reasoning.

5.   What are the characteristics of soft computing?

6.   What is called Hebb network?

7.   Write down the properties of fuzzy sets.

8.   What are the rules of defuzzification?

9.   Differentiate between Traditional and Genetic algorithm.

10. Mention few applications of GA.

SECTION B — (5 × 5 = 25 marks)

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

11. (a)   Write short notes on AI technique.

Or

   (b)   Explain the problem reduction technique with an example.

12. (a)   Write about Knowledge representations and mappings.

Or

   (b)   Compare Procedural vs Declarative knowledge.

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

Or

   (b)   Briefly explain the various learning process.

14. (a)   Explain the various operations on fuzzy set.

Or

   (b)   Explain the features of fuzzification.

15. (a)   What is fitness function? What is its role in GA?

Or

   (b)   Write about mutation in GA.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the Hill climbing algorithm with neat sketch.

17. How knowledge is represented using predicate logic? Explain.

2   **D–5577**

18. Describe the neural network architecture with neat sketch.

19. Discuss about fuzzy relations.

20. Explain the various Genetic operators.

––––––––––––––

D–5577

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

Fourth Semester

BIG DATA ANALYTICS AND R PROGRAMMING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   What do you mean by big data?

2.   Write down the limitations of Hadoop.

3.   What do you mean by MapReduce?

4.   Write any two applications of nearest neighbour search.

5.   What is NoSQL?

6.   How NoSQL is used to manage BigData?

7.   Write down the data types in R Language.

8.   What are the rules of strings in R?

9.   Write down the syntax for creating a List in R.

10.   What is the need for data reshaping?

SECTION B — (5 × 5 = 25 marks)

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

11. (a)   Describe the characteristics of Big Data.

Or

(b)   Write about Hadoop Ecosystem.

12. (a)   Write Map Reduce pseudocode for "Group By" "aggregation" in a database.

Or

(b)   Explain Nearest neighbour search method.

13. (a)   Explain the working of NoSQL Business drivers.

Or

(b)   Write down the variations of NoSQL architectural patterns.

14. (a)   Explain the various operations in R.

Or

(b)   Explain functions in R with syntax and examples.

15. (a)   Explain with syntax for manipulating array elements in R.

Or

(b)   Write short notes on melting and casting.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the technologies available for Big Data.

17. Explain the procedure for finding similar items using Map Reduce.

D–5578

18. Describe NoSQL data architectural pattern with neat sketch.

19. Write a R script to calculate the roots of quadratic equation.

20. Discuss about packages in R.

_____

D–5578

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 2022.

Fourth Semester

MOBILE APPLICATION DEVELOPMENT

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL 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 the term Mobile widget.

5. What is called click streams?

6. Define the term Prototyping.

7. Explain the benefits of J2ME.

8. Write a note on run time environment.

9. What are the advantages of Android OS?

10. What is meant by Android AVD.

SECTION B — (5 × 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 Informative 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) Discuss on MIDlet Programming and its advantages.

Or

(b) Discuss about J2ME wireless toolkit.

15. (a) Brief on Android environmental development.

Or

(b) Differentiate between eclipse and emulator.

2

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

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

17. Elaborate on 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 frameworks.

——————————

DISTANCE EDUCATION

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

First Semester

DIGITAL COMPUTER ORGANIZATION

(CBCS 2018/2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions

1. Convert $(736.4)_8$ to decimal number.

2. State the associative property of Boolean algebra.

3. Define the term Combinational circuit.

4. What is counter? Give an example.

5. Define the term register and give an example.

6. What is the difference between direct and indirect address instruction?

7. Mention the types of peripherals.

8. Compare Synchronous and Asynchronous transfers.

9. What is main memory?

10. Write the uses of cache memory.

PART B — (5 × 5 = 25 marks)

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

11. (a) Write short notes on ASCII and Excess 3 codes.

Or

(b) Describe briefly about Quine Mc-Kluskey method.

12. (a) Draw the gate circuit of RS flip flop and obtain its truth table

Or

(b) Brief on half subtractors with its circuit diagram.

13. (a) Write short notes on interrupts.

Or

(b) Brief on the design of Accumulator.

14. (a) Describe the organization of general registers.

Or

(b) Discuss about serial communication.

15. (a) Discuss about Associative memory.

Or

(b) Write short notes on memory management hardware.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the conversion of binary to decimal and hexadecimal to binary with example.

17. Discuss about Multiplexer and Demultiplexer.

2 **D–1557**

18. Explain memory reference instructions.

19. Discuss in detail about various addressing modes.

20. Explain how virtual address can be mapped to physical address.

––––––––––––

D–1557

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 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 questions

1. Define the term data encapsulation.

2. Draw the I/O stream hierarchy in C++.

3. What is the use of copy constructor?

4. Write the general form of a class declaration.

5. Define pure virtual function.

6. Write the syntax to declare a derived class.

7. Draw the hierarchy of stream classes for file operations.

8. Define the term class template.

9. What are the advantages of using exception handling?

10. List out any four common exceptions.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Explain the evolution of object oriented languages.

Or

(b) Illustrate the creation and use of user – defined manipulators.

12. (a) Write a C++ program to calculate the roots of a quadratic equations by initializing the object using default constructor.

Or

(b) Explain the concept of inline function with suitable program.

13. (a) Illustrate hybrid inheritance with the help of suitable example.

Or

(b) How to convert between objects and basic types? Explain with examples.

14. (a) With an example, explain the following functions for manipulating file pointers:

seekg(), seekp(), tellg(), tellp()

Or

(b) Discuss on function template with an example program.

15. (a) Write short notes on throwing mechanism.

Or

(b) How to handle exceptions in class templates? Explain with examples.

2

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions

16. Explain various formatted console I/O operations with suitable examples.

17. Explain the following with suitable examples:

    (a) Array of pointers

    (b) Friend function

18. What is the use of operator overloading? Write a program to overload post and pre increment operators.

19. How to inherit from template class? Explain with suitable example program.

20. Explain how to handle uncaught exceptions with appropriate example.

———————————

D–1558

DISTANCE EDUCATION

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

First Semester

DATA STRUCTURE AND ALGORITHMS

(CBCS 2018 – 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Distinguish between linear and non-linear data structures.

2. List out the application of Array.

3. How do you test for empty condition of a queue?

4. What are the operations performed on Stack?

5. Define the term completely binary tree.

6. Draw the tree for the expression (a+b/c)+((d*e-f)/g).

7. Define the term interval search.

8. What is the time complexity of Binary search?

9. When Bubble sort algorithm stops?

10. Which sorting algorithm is best if the list is already sorted? Why?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Write short notes on primitive data types.

Or

(b) Explain in detail about space complexity of an algorithm.

12. (a) Briefly explain about header linked list.

Or

(b) Write down the algorithm to convert an expression from infix to reverse polish notation. Illustrate the steps for the following expression: $(A+B)*D) \uparrow (E+D.)$

13. (a) Explain the different representations of Binary tree.

Or

(b) Construct the binary search tree using the following elements: 13,8,24,14,9,6,10. Illustrate preorder, inorder and postorder traversal for the same.

14. (a) Write the linear search algorithm. Calculate the time complexity of the linear search algorithm.

Or

(b) How linear search works? Explain with an example.

15. (a) Discuss in detail about tree sort method with an example.

Or

(b) Sort the following data using selection sort: 45 32 50 12 24 5 10

2   **D–1559**

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. What do you mean by Array? Explain in detail about multi-dimensional Array.

17. Describe the various operations on doubly linked list with examples.

18. Classify the Hashing functions and explain each with an example.

19. Write the algorithm for binary search. Validate the algorithm with a suitable data set.

20. Explain the following with suitable examples:(a)Radix sort (b) Insertion sort.

————————————

D–1575	Sub. Code
	31514

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 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 Well defined Formula.

2.   What is Power Set?

3.   State Relation.

4.   Define composition.

5.   What is one to one function?

6.   Discuss inverse function with example.

7.   Define semi group.

8.   What is identity?

9.   State Path.

10. Define Spanning Tree.

PART B — (5 × 5 = 25 marks)

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

11. (a) Construct the truth table for the statement formula $P v 7Q$.

Or

(b) Show that $S \; V \; R$ is tautologically implied by $(PVQ) \cap (P \rightarrow R) \cap (Q \rightarrow S)$.

12. (a) Let R be a relation on the set of positive real numbers so that its graphical representation consists of points in the first quadrant of the cartesian plane. What can we expect if R is (i) Reflexive (ii) Symmetric and (iii) Transitive?

Or

(b) Let A be a given finite set and $P(A)$ its power set. Let $\subseteq$ be the inclusion relation on the elements of $P(A)$. Draw Hasse diagrams of $(P(A), \subseteq)$ for $A = \{a\}, A = \{a,b\}, A = \{a,b,c\}$ and $A = \{a,b,c,d\}$.

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

Or

(b) Define the following: (i) recursive function (ii) Total function (iii) Partial function.

14. (a) Let $(Z,*)$ be an algebraic structure, where Z is the set of integers and the operation * is defined by $n * m = $ maximum of (n,m). Show that $(Z,*)$ is a semi group. Is $(Z,*)$ a monoid?

Or

2 D–1575

(b) Show that the set of all positive rational numbers forms an abelian group under the composition * defined by $a*b = (ab)/2$.

15. (a) Define the following terms. Give one suitable example for each (i) Euler circuit (ii) Hamiltonian graph.

Or

(b) State and prove Euler's theorem on plane graphs.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. If $A = \{\alpha, \beta\}$ and $B = \{1,2,3\}$ what are *AXB, BXA, AXA, BXB* and *(AXB)∩(BXA)?*

17. 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.

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

19. Show that set of all non zero real numbers is a group with respect to multiplication.

20. Explain Eulerian and Hamiltonian graphs with examples, also draw the graphs of the following (a) Eulerian but not Hamiltonian (b) Hamiltonian but not Eulerian.

————————

D–1575

D-1576	Sub. Code
	31521

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 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.   List the important accounting conventions.

2.   What are the four types of cash books?

3.   Mention the objectives of Balance Sheet.

4.   List out the advantages of using Trading a/c.

5.   What are the two types of Assets?

6.   State the advantages of subsidiary books.

7.   What do you mean by purchase book?

8.   What is the time value of money?

9.   What is capital structure?

10.   List the types of dividend decision.

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

11. (a) "Agreement of Trial Balance is the conclusive proof of accuracy of accounting process" Comment.

Or

(b) Prepare the Profit and Loss Account, from the following balances of Mr. Selvam for the year ending 31.12.2007.

Office rent Rs. 3,000

Printing expenses Rs. 2,200

Tax, Insurance Rs. 1,400

Discount received Rs. 400

Advertisement Rs. 3,600

Salaries Rs. 8,000

Stationeries Rs. 2,400

Discount allowed Rs. 600

Travelling expenses Rs. 2,600

Gross Profit transferred from the Trading A/c Rs. 25,000.

12. (a) Explain the following :

(i) Specimen of Trading a/c

(ii) Specimen of Profit & Loss a/c.

Or

(b) Explain the specimen of Balance Sheet.

D-1576

13. (a) Prepare a Petty cash book on the Unique Systems. From the following :

2005

Jan 1   Received Rs. 500 for Petty Cash

Jan 2   Paid bus fare 20

Jan 3   Paid for stationery 130

Jan 4   Paid for postage and telegrams 170

Jan 5   Paid for Cartage 100

Or

(b) From the following transactions, prepare necessary subsidiary books and prepare purchases a/c, sales a/c, purchase returns a/c and sales returns a/c.

2004 Nov,

1.   Purchased 20 carpets from Madanlal at Rs. 800 each.

5.   Mr. Champalal sold 15 special carpets to us @ Rs. 1,300 each.

9.   Purchased from Mr. Kesarilal 10 carpets @ Rs. 1,000 each.

13. Sold 10 carpets to Mr. Chandanlal at Rs. 1,000 each.

16. Returned 2 carpets to Mr. Champalal.

25. Sold to Miss Fatima 8 special carpets at Rs. 1200 each.

28. Chandanlal returned 2 carpets to us.

3

D-1576

14. (a) From the following information of Johnsons Ltd. on 31st March, 2003 you are required to prepare the Trading, Profit and Loss a/c and Balance Sheet :

	Rs.		Rs.
Opening Stock	5,000	Capital	89,500
Bills Receivable	22,500	Commission (Cr.)	2,000
Purchases	1,95,000	Return Outward	2,500
Wages	14,000	Trade Expenses	1,000
Insurance	5,500	Office Fixtures	5,000
Sundry Debtors	1,50,000	Cash in Hand	2,500
Carriage Inward	4,000	Cash at Bank	23,750
Commission (Dr.)	4,000	Rent & Rates	5,500
Interest on Capital	3,500	Carriage Outward	7,250
Stationery	2,250	Sales	2,50,000
Return Inward	6,500	Bills Payable	15,000
Creditors	98,250		
Closing Stock	12,500		

Or

(b) From the following information, you are required to prepare Trading, Profit and Loss Account and Balance Sheet:

	Dr.		Cr.
	Rs.		Rs.
Salaries	5,500	Creditors	9,500
Rent	1,300	Sales	32,000
Cash in hand	1,000	Capital	30,000
Debtors	40,000	Loans	10,000
Trade Expenses	600		

4

D-1576

| | Dr. | Cr. |
	Rs.	Rs.
Purchases	25,000	
Advances	2,500	
Bank Balance	5,600	
	81,500	81,500

Additional Information :

(i)   The Closing Stock amounted to Rs. 9,000

(ii) One month's is salary outstanding

(iii) One month's rent has been paid in advance

(iv) Provide 5 per cent for doubtful debts.

15. (a) Explain the concept of Break Even Analysis.

Or

(b) Explain the types of Budget.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. From the following trial balance extracted from the books of Thiru. Venkatachalam as on 31.12.07. Prepare (a) Trading and Profit & Loss A/c and (b) Balance Sheet

Trial Balance as on 31.12.07

Debit Balances	Rs.	Credit balances	Rs.
Cash in hand	2,000	Capital	2,00,000
Machinery	60,000	Sales	2,54,800
Stock	50,000	Sundry Creditors	40,000
Bills receivable	1,600	Bank overdraft	22,000

5

D-1576

Debit Balances	Rs.	Credit balances	Rs.
Sundry debtors	50,000	Return outwards	3,000
Wages	70,000	Discount received	1,800
Land	40,000	Bills payable	1,800
Carriage inwards	2,400		
Purchases	1,80,000		
Salaries	24,000		
Rent	4,000		
Postage	1,000		
Return inwards	3,200		
Drawings	10,000		
Furniture	18,000		
Interest	600		
Cast at bank	6,600		
	5,23,400		5,23,400

Stock as on 31.12.07 to Rs. 1,00,000

17. From the following Ledger Balance, prepare Trading and Profit & Loss Account and the Balance Sheet as on 31.12.2012.

	Rs.		Rs.
Capital	16,000	Cash at bank	2,600
Drawings	700	Salaries	800
Plant and machinery	12,000	Repairs	190
Horses and carts	2,600	Stock	1,600
Sundry Debtors	3,600	Rent	450
Sundry Creditors	2,600	Manufacturing expenses	150

6

D-1576

	Rs.		Rs.
Purchases	2,000	Bills payable	2,350
Sales	6,200	Bad debts	500
Wages	800	Carriage	160
Commission earned	1,000		

Adjustments :

The Closing Stock was Rs. 1,600

Depreciate Plant and Machinery 10% and Horses and Carts 15%.

Unpaid Rent amounted Rs. 50

18. Write a detailed about on Final Accounts.

19. Write a detailed note on profit variances.

20. Explain cost sheet in detail.

————————

D–1561		Sub. Code
		31522

DISTANCE EDUCATION

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

Second Semester

RELATIONAL DATABASE MANAGEMENT SYSTEMS (RDBMS)

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions

1. Write the levels of data abstraction.

2. What is the purpose of storage manager?

3. Define the term primary key.

4. Write the general form of SQL query for create a table.

5. What is meant by trigger?

6. What are the problems caused by redundancy?

7. When is the meaning of rolled back transaction?

8. What are the types of serializability?

9. Define the term Access Time.

10. What is hashing?

PART B — (5 × 5 = 25 marks)

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

11. (a) Discuss the types of Data Models.

Or

(b) Describe the role of Database administrator.

12. (a) Write short notes on integrity constraints over relations.

Or

(b) Describe briefly about tuple relational calculus.

13. (a) Write short notes on aggregate operators, giving examples.

Or

(b) Give a brief account on BCNF.

14. (a) Discuss about Timestamp based protocols.

Or

(b) Describe various recovery techniques during transaction.

15. (a) Discuss on clustered indexing.

Or

(b) Write about B+ tree.

2 **D–1561**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Construct an ER model for hospital management system.

17. Explain selection, projection and set operations giving examples.

18. What is normalization? Explain all the Normal forms.

19. What is concurrency control? How it is implemented in DBMS?

20. Explain in detail about various file organizations.

————————

3

D–1561

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 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 the importance of computer graphics?

2. What is a video display device in computer graphics?

3. What is clipping in computer graphics?

4. Define the term shear.

5. What is quadratic surface in computer graphics?

6. What is the difference between hermite and Bezier curves?

7. How 3D reflection differs from 2D reflection?

8. Why viewing transformation is important in computer graphics?

9. What is depth sorting in computer graphics?

10. What is meant by key frame?

PART B — (5 × 5 = 25 marks)

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

11. (a) List out the applications of computer graphics.

Or

(b) With a neat diagram, discuss about raster scan systems.

12. (a) Write short notes on translation operation with a neat diagram.

Or

(b) Explain about composite transformation with an example.

13. (a) Discuss briefly about parametric splines with a neat diagram.

Or

(b) Elaborate on constant intensity shading rendering method in computer graphics.

14. (a) Discuss briefly about 3D rotation operation with an example.

Or

(b) Writ short notes on perspective projection with an example.

15. (a) Discuss briefly about depth buffer method with a neat diagram.

Or

(b) Elaborate on animation languages in computer graphics.

2   **D–1562**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the working mechanism of cathode ray tube device with a neat sketch.

17. Discuss in detail about Cohen- Sutherland line clipping algorithm.

18. List out the properties of Bezier curves.

19. What is reflection in 3D transformation? Explain in detail about its types with necessary diagrams.

20. Discuss briefly about BSP tree with a neat sketch.

————————

D–1562

D–1577		Sub. Code
		31524

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 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 visual studio?

2. Define share point projects.

3. What is skeleton code?

4. Write a C# program to find the biggest of two numbers.

5. Define event.

6. What is the purpose of clean operation?

7. Define database.

8. Define application state.

9. What is WPF?

10. Define silverlight.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Differentiate Menu bar and Toolbar.

Or

(b) What are Office projects and database projects? Explain with suitable example.

12. (a) What is main method in C#? Explain with example.

Or

(b) Explain the concept of Namespace with suitable example.

13. (a) Explain the concept of Interface with suitable example.

Or

(b) Write a C# program to find the biggest of "n" numbers using array.

14. (a) What is breakpoint? Explain with suitable example.

Or

(b) How do you relate table with foreign key? Explain in detail.

15. (a) Explain the Data Grid control with suitable example.

Or

(b) Write short notes on Model View Controller.

D–1577

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. How do you create Windows project and Web project in visual studio? Explain with suitable example.

17. Explain the various looping structures are used in ASP.Net with suitable example.

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

19. List and explain any four types of windows are used for viewing application state in visual studio.

20. List and discuss any three layout controls are used in visual studio to size the screen.

————————

D–1577

DISTANCE EDUCATION

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

Third Semester

SOFTWARE ENGINEERING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours　　　　　　　　Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Define the term Software Engineering.

2. What is called process assessment?

3. What do you mean by requirement elicitation?

4. What are the benefits of flow-based modelling?

5. What are the components of data design?

6. Write down the golden rules of user interface design.

7. Write down the principles of software testing.

8. Differentiate between black box and white box testing.

9. What is risk refinement?

10. What is the outcome of formal technical reviews?

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Discuss on CMMI.

Or

(b) List the task regions in spiral model.

12. (a) Explain the various tasks of Requirement engineering.

Or

(b) Write short notes on scenario based modelling.

13. (a) Write about Design process and quality.

Or

(b) Describe the steps in User Interface design.

14. (a) Explain Integration testing strategy.

Or

(b) Explain the need for system testing.

15. (a) Compare proactive vs reactive risk strategies.

Or

(b) Discuss the activities of Software Quality assurance.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the Evolutionary Software process models.

17. Describe the steps in building the analysis model.

D–1578

18. Explain the various components of software architectural design.

19. Explain the testing strategies for object-oriented software.

20. Discuss about risk protection and risk refinement methods.

———————

DISTANCE EDUCATION

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

1.   Define the term OS.

2.   What do you mean by system call?

3.   What is IPC?

4.   Mention the benefits of Multiprocessor scheduling.

5.   What is semaphore?

6.   How deadlocks are detected?

7.   What is swapping?

8.   Differentiate between paging and segmenting.

9.   List out various File access methods.

10.   What are called secondary storage devices?

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe the structure of OS.

Or

(b) List and explain the various services of OS.

12. (a) Explain the various operations on processes.

Or

(b) Explain Round Robin scheduling algorithm with an example.

13. (a) What are the requirements that satisfy critical section problem?

Or

(b) Explain the algorithm for deadlock prevention.

14. (a) Compare and contrast internal and external fragmentation.

Or

(b) Explain the Optimal Page Replacement algorithm.

15. (a) Write about File sharing and protection mechanism.

Or

(b) What is Disk scheduling? Explain.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain about Operating System design and Implementation.

17. Explain the various process states with neat sketch.

2   **D–1564**

18. Describe any one of the deadlock avoidance algorithms.

19. Explain contiguous memory allocation method and its drawbacks.

20. Elaborate on Directory Implementation methods.

—————————

DISTANCE EDUCATION

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

Third Semester

INTERNET AND JAVA PROGRAMMING

(CBCS 2020-21 Academic Year onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Write the meaning of Internet Relay Chat.

2. Mention the names of four internet browsers.

3. What is the role of java in internet applications?

4. What is the job of Bitwise operator?

5. Distinguish between static and final methods.

6. What is Wrapper Class?

7. Define the term Runnable interface.

8. How an applet differs from console based application?

9. What are streams in Java?

10. Write a note on Interactive Input and Output stream classes.

PART B — (5 × 5 = 25 marks)

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

11. (a) Discuss on internet conferencing techniques.

Or

(b) Write in detail about usenet newsgroup.

12. (a) Discuss about the features of Java.

Or

(b) Write a Java program to find the largest of three numbers.

13. (a) Briefly explain about method overloading in Java.

Or

(b) Illustrate the use of vector class with an example program.

14. (a) Elaborate on Thread priorities.

Or

(b) Describe the life cycle methods of an Applet.

15. (a) Write short notes on character stream classes.

Or

(b) Brief on the use of File reader class.

2 **D–1579**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Bring out the uses of Email. Explain in detail about configuring and sending Email.

17. Compare while and do while loop with suitable examples.

18. How Java supports multiple inheritance? Explain with an example.

19. Explain bar charts in graphics class. How to implement it?

20. With an example program explain random access file handling.

————————————

D–1579

DISTANCE EDUCATION

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

Third Semester

COMPUTER NETWORKS

(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 computer network?

2.   What is meant by digital signal?

3.   Define the term block coding.

4.   Give a note on stop – wait protocol.

5.   What is message switching?

6.   What is called dynamic routing?

7.   What is UDP?

8.   What is E-mail?

9.   Why cryptography is important in network security?

10. Define the term DES.

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Describe line configuration and transmission modes.

Or

(b) Write short notes on analog and digital signal performance.

12. (a) Discuss about cyclic redundancy check.

Or

(b) Explain sliding window protocol.

13. (a) What is switching? Explain virtual circuit and datagram subnets.

Or

(b) Write short notes on static routing.

14. (a) Explain the architecture and functions of TCP.

Or

(b) How the files are transferred in transport layer? Discuss.

15. (a) Describe encryption models.

Or

(b) Explain about RSA.

D–1580

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. What is transmission media? Explain the working principles of transmission media.

17. Illustrate the data link layer protocols.

18. Elaborate on congestion control algorithms.

19. Explain in detail about Remote Procedure Call.

20. Explain about asymmetric key cryptography.

—————

3 **D–1580**

DISTANCE EDUCATION

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

Third Semester

DATA MINING AND WAREHOUSING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. What are the different forms of knowledge?

2. What is meant by data visualization?

3. Define the term classification in data mining.

4. What is meant by decision tree?

5. Define the term Clustering.

6. Define the term Neural Network.

7. List any two tools used in data mining.

8. What do you mean by Text mining.

9. List the characteristics of big data.

10. What is the job of hadoop?

SECTION B — (5 × 5 = 25 marks)

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

11. (a) Discuss on the hardware options for data warehouse.

Or

(b) Bring out the current trends in data mining.

12. (a) Write steps in dynamic itemset algorithm.

Or

(b) Explain about data partitioning in association rule discovery.

13. (a) Explain briefly about anyone hierarchical clustering technique.

Or

(b) Explain briefly about the working of Neural Network.

14. (a) Discuss on Text clustering.

Or

(b) Give a brief account on Knowledge mining.

15. (a) Write short notes on Big Data Analytics.

Or

(b) Explain the traditional approach to handle big data.

2　　　　**D–1581**

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain in detail about KDD process.

17. Explain about Bayesian classification technique.

18. Explain CACTUS algorithm for clustering.

19. Explain about anyone of the visual data mining tools.

20. Describe the physical architecture of Hadoop.

———————

3

D–1581

DISTANCE EDUCATION

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

Fourth Semester

INTERNET OF THINGS (IoT)

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   What is the Internet Of Things (IoT)?

2.   List out the advantages of IoT.

3.   What is Bluetooth Low Energy?

4.   Mention the mostly used IoT protocols.

5.   How to run Raspberry pi in headless mode?

6.   What is a library in Arduino?

7.   List out the key features of Python.

8.   What is PYTHON PATH?

9.   What is slicing in Python?

10. What are functions in Python?

PART B — (5 × 5 = 25 marks)

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

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

Or

(b) Describe about IoT protocols.

12. (a) What are the differences between IoT and M2M?

Or

(b) Write short note on different types of sensors and its uses.

13. (a) What are the various types of antennas designed for IoT devices?

Or

(b) How IoT can be used in smart agriculture?

14. (a) Explain the bitwise operators in Python with examples.

Or

(b) What are the mutable built-in data types in python?

15. (a) Explain the python recursive function with a program to find out factorial of a number.

Or

(b) Explain the process of creating class and object in python with example.

2   **D–1582**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write brief note on Physical design and logical design of IoT.

17. Explain in detail the IoT design methodology.

18. Enumerate the various tools used for IoT.

19. Write a program to create a simple calculator using functions with arguments.

20. Discuss in detail about JSON and XML.

————————

DISTANCE EDUCATION

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

Fourth Semester

ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING

(CBCS 2020 – 2021 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.   Differentiate strong AI and weak AI.

3.   Define Frame problem.

4.   How to represent ISA relationship.

5.   What is Soft Computing?

6.   Write any two applications of ANN.

7.   Differentiate Crisp set and Fuzzy set.

8.   Specify various types offuzzy relations.

9.   Write the elements of Genetic Algorithm.

10.   Name any two applications of Genetic Algorithm.

PART B — (5 × 5 = 25 marks)

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

11. (a) Describe the various problems of Artificial Intelligence.

        Or

    (b) Explicate the characteristics of production system.

12. (a) How to represent simple facts in predicate logic? Explain with an example.

        Or

    (b) Write the differences between forward and backward reasoning.

13. (a) Differentiate Soft computing and Hard computing.

        Or

    (b) Elaborate the concepts of McCulloch-Pitts model.

14. (a) Illustrate the various operations of Fuzzy Set.

        Or

    (b) Write a short note on Tolerance Relation.

15. (a) Explain the concepts of encoding in Genetic Algorithm.

        Or

    (b) Write the classifications of Genetic Algorithm.

2   **D–1583**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain any two heuristic search techniques in detail.

17. Discuss the various approaches to knowledge representation.

18. Describe the Neural Network Architecture with a neat diagram.

19. Give a brief account on Fuzzification and Defuzzification.

20. Illustrate the various Genetic operators in detail.

————————

D–1583

DISTANCE EDUCATION

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

Fourth Semester

BIG DATA ANALYTICS AND R PROGRAMMING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1.   What is Categorical Data?

2.   What is the role of Secondary node in Hadoop environment?

3.   What is Map Reduce?

4.   Define filtering.

5.   What is Column Store Database?

6.   What is NoSQL?

7.   What are the features of R languages?

8.   Give an example for break statement.

9.   Define package.

10. What is a list in R programming?

PART B — (5 × 5 = 25 marks)

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

11. (a) Briefly Explain the following Concepts

   (i) Structured Data

   (ii) Unstructured data

      Or

   (b) Explain the various Services of HDFS in detail.

12. (a) Explain the applications of Nearest neighbor search.

      Or

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

13. (a) Differentiate SQL and NoSQL.

      Or

   (b) What is Key-Value Store Database? Explain with example.

14. (a) Explain the following with example in R

   (i) if else

   (ii) nested if

      Or

   (b) Write any R program for switch statement.

15. (a) Write a short note on creation of data frame.

      Or

   (b) Explain the concept of data reshaping in with example.

2   **D–1584**

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Briefly explain the physical architecture of Hadoop in detail.

17. Discuss the various distance methods are used to measure the distance in detail.

18. How do you store and process the data in the form document database? Explain in detail.

19. Explain the various looping structures are used in R language with example.

20. (a) How do you manipulate list elements? And

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

———————————

D–1584

DISTANCE EDUCATION

M.C.A. DEGREE EXAMINATION, MAY 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.   Name any two mobile Platforms.

2.   Define Framework.

3.   What is utility apps?

4.   Expand LBS.

5.   State click streams.

6.   State wire frames

7.   What is midlet?

8.   What is wireless toolkit?

9.   What is AVD?

10. State emulator.

PART B — (5 × 5 = 25 marks)

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

11. (a) Briefly explain the concept of networks.

Or

(b) Write short note on operating systems.

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

Or

(b) Elucidate the concept of Enterprise applications.

13. (a) How do you interpreting the mobile design? Explain in detail.

Or

(b) Write a short note on prototyping.

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

Or

(b) Describe about J2ME wireless toolkit.

15. (a) Write detailed note on google android.

Or

(b) Clarify the concept of Android SDK.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the services of mobile eco system.

17. Describe in detail about Location based services.

D–1585

18. Write brief note on mobile design tools.

19. Neatly sketch the concept of J2ME architecture.

20. Clarify the following
    (a) Samsung Bada
    (b) Nokia Symbian
    (c) Microsoft windows Phone

————————————

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 × 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 × 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.

2

PART C — (3 × 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.

————————

D–4508

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 × 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 × 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.

D–4509

PART C — (3 × 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.

————————————

3

D–4510

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 × 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 × 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.

2 **D–4510**

PART C — (3 × 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.

————————

3

D–4519

Sub. Code
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 × 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 × 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.

D–4519

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 :

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

3   **D–4519**

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 $\dfrac{(n-k)(n-k+1)}{2}$ edges.

————————

D–4519

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 × 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 × 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

2 **D–4520**

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

3   **D–4520**

	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

4

D–4520

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

D–4520

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.

———————

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 × 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 × 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.

D–4511

PART C — (3 × 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.

———————

3

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 × 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 × 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.

D–4512

PART C — (3 × 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.

————————

D–4512

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 × 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 × 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.

2

PART C — (3 × 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.

————————

3

D–4521

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 × 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 × 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.

2 **D–4522**

PART C — (3 × 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.

————————

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 × 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.

2   **D–4513**

PART C — (3 × 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.

————————

D–4513

D–4523

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 × 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 × 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.

2 **D–4523**

PART C — (3 × 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.

———————————

D–4523

D–4524

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 × 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 × 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.

2 **D–4524**

PART C — (3 × 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.

———————

D–4524

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 × 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 × 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.

D–4525

PART C — (3 × 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.

————————

D–4526

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 × 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 × 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 × 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.

————————

D–4526

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 × 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 × 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 × 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.

————————

D–4527

D–4528		Sub. Code
		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 × 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 × 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.

D–4528

PART C — (3 × 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.

———————

D–4528

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 × 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 × 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.

2   **D–4529**

PART C — (3 × 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.

————————

D–4529