## 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.

**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.

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**D–7554**

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## 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.

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| D–7556 | | Sub. Code |
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# 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.

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3                    **D–7556**

### 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.

**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?

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4 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 |

2  **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 | |

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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**

| D–7558 | | Sub. Code |
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| | | 31522 |

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.

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.

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**D–7559**

## 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.

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3 D–7559

**D–7574**

**Sub. Code**

**31524**

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.

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3                                    **D–7574**

## 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.

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## 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.

2                              **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.

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**D–7561**

| D–7576 | Sub. Code |
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| | 31533 |

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.

**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.

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**D–7577**

# 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.

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| D–7578 | **Sub. Code** |
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## 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.

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**D–7578**

## DISTANCE EDUCATION

M.C.A.(Computer Applications) DEGREE EXAMINATION,
DECEMBER 2022.

Fourth Semester

INTERNET OF THINGS (IoT)

(CBCS 2020–21 Academic Year Onwards)

Time : Three hours                Maximum : 75 marks

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.

2    **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.

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## 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.

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**D–7580**

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.

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**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.

**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.

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