D–6501	Sub. Code
	31511

DISTANCE EDUCATION

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

First Semester

DIGITAL COMPUTER ORGANIZATION

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. Find 2's complements for the following binary numbers : (a) 1000 0001 (b) 0011 0110.

2. Simplify the expression (A'B'C'+B'CD'+A'BCD'+AB'C') using Boolean algebra.

3. Define the term full adder.

4. What is meant by latch?

5. What are memory reference instructions?

6. What is meant by addressing?

7. Define the term stack.

8. What are the modes of transfer?

9. Differentiate between static and dynamic random access memory.

10. What are significance of levels of cache?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Write short notes on binary subtraction.

Or

(b) Describe the fundamental concepts of Boolean algebra.

12. (a) Give a brief account on half adder and full adder.

Or

(b) Describe floating point representation with examples.

13. (a) Briefly explain about computer registers.

Or

(b) Brief on the design of accumulator logic.

14. (a) Explain three types of instruction formats with example.

Or

(b) Write short notes on peripheral devices.

15. (a) Discuss on associative memory.

Or

(b) What do you mean by virtual memory? How virtual address is translated into physical address?

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

Answer any THREE questions.

16. Simplify the following Boolean expression using K-map : $F(A, B, C, D) = \Sigma(0,2,4,5,6,7,8,10,13,15)$.

17. List and explain the functionality of any two types of flip flop.

18. What is the instruction cycle? Describe the phases of instruction cycle.

19. Explain the use of DMA controller in a computer system with a neat diagram.

20. Describe in detail the Memory hierarchy.

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D–6502	Sub. Code
	31512

DISTANCE EDUCATION

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

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. Define : Dynamic binding.

2. What is a stream?

3. What are the limitations of C structure?

4. Mention the two parts of class specification.

5. Define the term reusability.

6. What is the use of this pointer?

7. Distinguish between input and output streams.

8. What is a macro?

9. Define : Asynchronous exception.

10. When a program thrown an exception?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Distinguish between put( ) and get( ) functions.

Or

(b) Discuss about manipulators.

12. (a) What are the merits and demerits of using friend functions? Explain.

Or

(b) Explain parameterized constructors through an example.

13. (a) How members in a class are accessed in single inheritance? Discuss.

Or

(b) Discuss unary operator overloading, giving an example.

14. (a) Explain in detail about file streaming classes.

Or

(b) How to create a class template? Explain.

15. (a) Write a note on try and catch statements.

Or

(b) Explain about memory allocation failure exception.

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

Answer any THREE questions.

16. Describe the basic concepts of object oriented programming.

17. Illustrate array of objects with an example program.

18. Briefly explain about multilevel inheritance with suitable example.

19. Elaborate on sequential I/O operations.

20. Explain exception handling in constructors and destructors.

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D–6503	Sub. Code
	31513

DISTANCE EDUCATION

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

First Semester

DATA STRUCTURE AND ALGORITHMS

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. Write down the definition of data structure. Give two examples for it.

2. What are the salient features of an efficient algorithm?

3. What are the applications of queue?

4. Write an example for infix and postfix expression.

5. What are the two methods of binary tree implementation?

6. Define the term 'Height of tree'.

7. Define the term complete binary tree.

8. What is linear search?

9. What is meant by sorting?

10. State the logic behind bubble sort algorithm.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain various characteristics of an array.

Or

(b) Discuss on various types of data structure.

12. (a) Explain the working principle of circular linked list.

Or

(b) Explain any two applications of stack with examples.

13. (a) Brief on different ways of representing linked list.

Or

(b) How do you insert an element into a binary search tree? Explain.

14. (a) Explain different ways of representing a binary tree.

Or

(b) Write an algorithm for binary search and explain the steps with illustrations.

15. (a) Write an algorithm to implement radix sort. Demonstrate it with suitable example.

Or

(b) Sort the following numbers using selection sort :

89, 45, 14, 39, 41, 80, 35, 77.

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

Answer any THREE questions.

16. Explain in detail about multi-dimensional array with suitable examples.

17. Write an explain the algorithm to create, insertion and traverse a doubly linked list with illustrations.

18. Explain the various types of tree traversal with suitable example diagrams.

19. Elaborate on Hashing techniques.

20. Explain how to sort the elements using insertion sort algorithm and derive time complexity for the same.

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D–6515	Sub. Code
	31514

DISTANCE EDUCATION

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

First Semester

DISCRETE MATHEMATICS

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. Give the converse of the implication "If it is raining, then I get wet".

2. Define complement of set.

3. When is ration is said to be symmetric?

4. Define partial ordering relation with an example.

5. Define equivalence relation.

6. Define characteristic function.

7. Give an example of a semi group.

8. Find all the left cosets of {[0], [2]} in the group $(Z_4, +_4)$.

9. Define graph.

10. If A and B are independent events with $P(A) = 0.4$ and $P(B) = 0.5$ find $P(A \cup B)$.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Show that $\neg(P \to Q) \to \neg Q$ is a tautology.

Or

(b) Show that $\neg(P \leftrightarrow Q) \Leftrightarrow (P \vee Q) \wedge \neg(P \wedge Q)$.

12. (a) Given $S = \{1,2,3,....10\}$ and a relation R on S where $R = \{(x,y) \mid x + y = 10\}$, what are the properties of the relation R?

Or

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

13. (a) List all possible functions from $X = \{a,b,c\}$ to $Y = \{1,2\}$ and indicate in each case whether the function is one-to-one is onto and is one-to-one.

Or

(b) Prove that the composition function is associative.

14. (a) Prove that for any commutative monoid $(M,*)$, the set of idempotent elements of M forms a submonoid.

Or

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

15. (a) Write the adjacency matrix of the graph $G = \{(v_1,v_3),(v_1,v_2),(v_2,v_4),(v_3,v_1),(v_2,v_3),$ $(v_3,v_4),\ (v_4,v_1),\ (v_4,v_2),(v_4,v_3)\}$. Also draw the graph.

Or

(b) Define expectation of X and find the $Var(3X + 8)$ if $Var(X) = 4$, where X is a random variable.

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

Answer any THREE questions.

16. Obtain the PCNF and PDNF of $(P \wedge Q \wedge R) \vee (\neg P \wedge Q \wedge R) \vee (\neg P \wedge \neg Q \wedge \neg R)$.

17. In a relation R be defined on the set of all natural numbers by "if $x, y \in N \Leftrightarrow x - y$ is divisible by 7". Show that R is an equivalence relation.

18. If A and B are any two sub sets of U, then prove that $f_{A \cup B}(x) = f_A(x) + f_B(x) - f_{A \cap B}(x)$, for all $x \in U$.

19. State and prove Lagrange's theorem.

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* and 5%, 4%, 2% respectively are defective. A bolt is drawn at random from the total output and its is found to be defective. What is the probability that is was manufactured by the machine *B*.

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D–6516	Sub. Code
	31521

DISTANCE EDUCATION

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

Second Semester

ACCOUNTING AND FINANCIAL MANAGEMENT

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL questions.

1. Define accounting.

2. What is book keeping? What are its objects?

3. Give the meaning of debt-equity ratio and state its significance.

4. What are the functions of cost accounting?

5. What is break-even point?

6. What is master budget?

7. What is profit variance?

8. What are the objectives of financial management?

9. What is permanent working capital?

10. What is cost of capital?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) What are the limitations of financial accounting?

Or

(b) The following are the balance sheet of Ganesh Steels Ltd., for the years 2018 and 2019 :

Liabilities	2018 Rs.	2019 Rs.	Assets	2018 Rs.	2019 Rs.
Share capital	2,00,000	1,00,000	Building	20,000	15,000
Mortgage loan	25,000	30,000	Land	30,000	25,000
Creditors	40,000	30,000	Plant	20,000	40,000
Bills payable	18,000	28,000	Stock	30,000	20,000
Outstanding expenses	5,000	3,000	Debtors	40,000	30,000
General reserve	8,000	5,000	Cash	10,000	5,000
P&L a/c	18,000	18,000	Bank	2,000	8,000
Depreciation on building	3,000	4,000	Goodwill	6,000	12,000
			Bills receivable	20,000	30,000
			Investment	1,39,000	33,000
	3,17,000	2,18,000		3,17,000	2,18,000

Prepare statements showing changes in working capital.

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

Or

(b) The following information relates to the manufacture of a product during the month of January 2010 :

Direct raw materials	Rs. 1,60,000
Direct wages	Rs. 90,000
Machine hours worked	6000 hours
Machine hour rate	Rs.6
Office overhead	15% of work cost
Selling overhead	Rs. 2 per unit
Units produced	5000 units
Units sold	5,000 units @ Rs. 80 each

Prepare a cost sheet and show (i) cost per unit and (ii) profit for the period.

13. (a) Prabhu & Co. produces three types of products named as A, B and C. the sales forecast for these products are – A: 42,500 units, B : 37,000 units and C : 44,500 units.

The estimated requirements of inventory at the beginning and end of the budget period are as follows :

	Product A	Product B	Product C
	Units	Units	Units
1st January	8,100	6,250	9,700
31st December	10,500	6,100	13,500

You are required to draw a production budget.

Or

(b) What are the requisites for effective budgetary control?

14. (a) A project cost Rs. 25,000 and it generates cash inflows through a period of five years Rs. 9,000; Rs. 8,000; Rs. 7,000; Rs. 6,000 and Rs. 5,000. The required rate of return is assumed to be 10%. Find out the net present value of the project.

Year	1	2	3	4	5
PV factor @ 10%	0.9091	0.8264	0.7513	0.6830	0.6200

Or

(b) State the objectives and importance of capital budgeting.

15. (a) What are the different sources of capital?

Or

(b) Describe the method of calculating the weighted average cost of capital.

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

Answer any THREE questions.

16. Prepare trading and profit and loss account and balance sheet of Jagan as at 31st March 2018 from the following balances :

	Rs.		Rs.
Capital (Cr.)	3,60,000	Salaries	60,000
Machinery	70,000	General expenses	20,000
Sales	8,20,000	Rent	50,000
Purchases	4,00,000	Purchases return	5,000
Sales return	10,000	Debtors	3,00,000
Stock on 1st April 2017	1,00,000	Cash	40,000
Drawing	40,000	Carriage outwards	20,000
Wages	1,00,000	Advertising	20,000
Carriage inwards	5,000	Creditors	50,000

The closing stock was valued at Rs. 2,00,000.

17. From the following information calculate : (a) P/V ratio (b) Break-even point, and (c) If the selling price is reduced to Rs. 80, calculate new break-even point.

Total sales	Rs. 5,00,000
Selling price per unit	Rs. 100
Variable cost per unit	Rs. 60
Fixed cost	Rs. 1,20,000

18. Prepare a flexible budget for overheads on the basis of the following data. Ascertain the overhead rates at 60% 70% and 80% capacity.

	Capacity level 60%
Variable overheads:	Rs.
Material	6,000
Labour	18,000
Semi-variable overheads :	
Electricity (40% fixed, 60% variable)	30,000
Repairs (80% fixed, 20% variable)	3,000
Fixed overheads :	
Depreciation	16,500
Insurance	4,500
Salaries	15,000
Total overheads	93,000
Estimated direct labour hours	1,86,000 hrs

19. The company is considering investment of Rs. 1,00,000 in a project. The following are the income forecasts, after depreciation and tax.

I year – Rs. 10,000; II year – Rs. 40,000; III year – Rs. 60,000; IV year – Rs. 20,000; and V year – Rs. Nil.

From the above information you are required to calculate: (i) pay – back period and (ii) discounted pay-back period @ 10% interest factor.

Year	1	2	3	4	5
PV factor @ 10%	0.9091	0.8264	0.7513	0.6830	0.6200

20. Describe the factors determining the dividend decision.

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D–6504	Sub. Code
	31522

DISTANCE EDUCATION

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

Second Semester

RELATIONAL DATABASE MANAGEMENT SYSTEMS
(RDBMS)

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. What does RDBMS stand for?

2. Name the language used to interact with RDBMS databases.

3. Which database model is the basis for RDBMS?

4. What is a primary key in a relational database?

5. Define normalization in the context of RDBMS.

6. What is the purpose of foreign keys in a database?

7. Name one popular open-source RDBMS.

8. What does SQL stand for?

9. Differentiate between a database and a table in RDBMS.

10. Explain the concept of data integrity in RDBMS.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) What are Data models? Explain it.

Or

(b) Explain DML commands.

12. (a) Write and explain quering relational data.

Or

(b) Write a short note on tuple relational calculus with example.

13. (a) What are the types of forms? Explain.

Or

(b) Explain : impact on SQL constructs.

14. (a) Write a detail note on recoverability.

Or

(b) Write a short notes on tree base indexing.

15. (a) Explain Hash based indexing in detail.

Or

(b) What are the indexed sequential access methods? Explain it.

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

Answer any THREE questions.

16. Explain : Data base design and ER diagrams.

17. Explain : Complex integrity constraints in SQL.

18. Explain : Dependency preserving decomposition in detail.

19. List out and explain the Lock based protocols.

20. Write a detailed note on dynamic index structure.

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D–6505

Sub. Code
31523

DISTANCE EDUCATION

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

Second Semester

COMPUTER GRAPHICS

(CBCS 2018 / 2020 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. Bring out the reasons for using computer graphics.

2. Write down the features of computer Graphics.

3. What is geometric transformation in computer graphics?

4. What is clipping in computer graphics? Give an example.

5. How are 3D objects represented in computer graphics?

6. What are the applications of curves in computer graphics?

7. How do you view 3D objects in computer graphics?

8. Which projection gives realistic effect?

9. What is visible surface detection in computer graphics?

10. What are the types of animation in computer graphics?

SECTION B — ($5 \times 5 = 25$ marks)

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

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

Or

(b) What is video display device? Describe about cathode ray tube with a neat diagram.

12. (a) What is scaling? Briefly discuss about it with illustrations.

Or

(b) What are composite transformations? Explain.

13. (a) What are polygon surfaces in computer graphics? Explain with illustrations.

Or

(b) What are hermite curves? Bring out its limitations.

14. (a) What is translation in a 3D geometric transformation? Illustrate it.

Or

(b) What is scaling transformation? Give its types with neat sketch.

15. (a) What is scan line polygon fill algorithm? List out its advantages.

Or

(b) What are raster and vector graphics in computer graphics? Brief on raster animation.

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

Answer any THREE questions.

16. Elaborate on Bresenham's line drawing algorithm with illustrations.

17. Explain the following with necessary diagrams.

    (a) 2D Rotation transformation

    (b) 2D shear transformation.

18. What is Bezier curve? Describe in detail about its properties.

19. What is projection in computer graphics? Explain in detail about its types with illustrations.

20. What are BSP trees? Describe in detail about its types with necessary diagrams.

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D–6517	Sub. Code
	31524

DISTANCE EDUCATION

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

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. Write a short note on menu.

2. Mention the use of dock windows.

3. What is mean by name space?

4. Write the syntax for creating a class.

5. Define the term event.

6. State the uses of assembly name.

7. What is called break point?

8. Mention the uses of table designer.

9. Write a short note on WPF.

10. How will you set the properties of silver light?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Brief on the benefits of using visual studio.

Or

(b) How will you arrange components in tool box? Explain with illustrations.

12. (a) How inheritance facilitates code reusability? Explain its use.

Or

(b) Write a sample code to illustrate the use of abstract class.

13. (a) How will you create an event and delegate? Explain with Illustrations.

Or

(b) Explain the benefits of solution folders.

14. (a) What is intelliTrace? Explain with Illustrations.

Or

(b) Explain the concept of watch window and immediate window.

15. (a) Write a short notes on grid layout.

Or

(b) How will you configure a combo box? Explain its use.

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

Answer any THREE questions.

16. What is solution explorer? Explain the add projects and items in the solution explorer.

17. Explain the working principle of different types of branching statements and loops with their syntax.

18. How to create a class and implement the interface? Explain through an example.

19. What is foreign key? Discuss in detail about the two related tables that use foreign key through examples.

20. Describe the relationship between MVC objects.

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D–6518	Sub. Code
	31531

DISTANCE EDUCATION

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

Third Semester

SOFTWARE ENGINEERING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. Define the term software project.

2. What is unified process?

3. Write a note on object oriented modeling.

4. What do you mean by requirement?

5. Give a note on data abstraction.

6. Define the term data design.

7. What do you mean by debugging?

8. What is software metrics?

9. Write a note on software risk.

10. Mention the uses of risk control.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Brief on the concept of classification of software.

Or

(b) Write the advantages and disadvantages of iterative enhancement model.

12. (a) Explain the various types of feasibility.

Or

(b) Write short notes on behavioral modeling.

13. (a) Explain the various types of design patterns.

Or

(b) Describe the process of user interface design.

14. (a) Illustrate the concept of white box testing and block box testing.

Or

(b) Explain the guidelines for software metrics.

15. (a) Discuss in detail about reactive strategies.

Or

(b) Describe the concept of s/w quality assurance.

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

Answer any THREE questions.

16. Explain the different approaches used for assessing software process.

17. Describe the various types of elicitation techniques.

18. Discuss in detail about commonly used architectural styles.

19. Explain the measures for software quality.

20. How will you identify the risk in software projects? Explain in detail.

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D–6506

Sub. Code
31532/34032

DISTANCE EDUCATION

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

Third Semester

OPERATING SYSTEM

(CBCS 2018/2020 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. What do you mean by computer organization?

2. What are the three services in operating system?

3. What is IPC connection?

4. What do you mean by scheduling?

5. What is synchronization on OS?

6. What causes deadlock?

7. What are the basic min memory allocation strategies?

8. Which order of memory allocation in best?

9. What is file structure in operating system?

10. What is a secondary storage structure in operating system?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Discuss briefly about the organization of an operating system.

Or

(b) Write short notes on system calls.

12. (a) What is process scheduling? Explain.

Or

(b) Bring out various criteria to be considered for scheduling.

13. (a) Discuss briefly about the critical section problem.

Or

(b) What are the methods involved in handling deadlock?

14. (a) With a neat structure discuss about contiguous memory allocation.

Or

(b) What is swapping? Explain with its structure.

15. (a) Discuss briefly about the concept of file sharing.

Or

(b) Write short notes on disk structure.

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

Answer any THREE questions.

16. Elaborate on the operations of an operating system.

17. What is inter process communication? Explain about process with a neat diagram.

18. What are called semaphores? Discuss in detail.

19. What is called paging? Explain in detail with its structure.

20. What is free space management? Explain in detail about any one of its type.

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D–6519	Sub. Code
	31533

DISTANCE EDUCATION

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

Third Semester

INTERNET AND JAVA PROGRAMMING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. Define World Wide Web.

2. What is DNS?

3. State any two features of object-oriented programming.

4. Define JVM.

5. What are the arithmetic operators in Java?

6. How to create objects from a lass in Java?

7. Specify the uses of extending interface in Java.

8. What are the types of thread methods?

9. Define stream.

10. How to create a file in Java?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Differentiate between FTP and Telnet.

Or

(b) Illustrate the procedures to connect to the Internet.

12. (a) How does java differ from C and C++? Explain.

Or

(b) Demonstrate the decision making statements in Java with the examples.

13. (a) Write the differences between method overloading and overriding.

Or

(b) How to implement the interfaces? Explicate with sample program.

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

Or

(b) Illuminated different types of errors with the suitable exceptions.

15. (a) List and description of the various stream classes available in Java.

Or

(b) How to read the bytes from a random access file? Explicate with suitable program.

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

Answer any THREE questions.

16. Describe any two applications of World Wide Web.

17. Explain different types of operators in Java with the sample program.

18. Illustrate the different forms of inheritances in Java with the examples.

19. Design a Home page for a college using applet programming.

20. Explicate any two input/output exceptions with the example programs.

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D–6520	Sub. Code
	31534

DISTANCE EDUCATION

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

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. Define the term NIC.

2. What is digital signal?

3. Define the term CRC.

4. Mention the use of data link control.

5. Define the term bottleneck problem.

6. What is multicast routing?

7. Brief on the concept of file transfer.

8. Write a short note on domain name system.

9. Give a note on cryptography.

10. What is digital signatures?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Brief on the goals of computer networks.

Or

(b) Demonstrate the concept of unguided transmission media.

12. (a) Discuss in detail about framing in data link layer.

Or

(b) Describe a few main differences between simple ALOHA and slotted ALOHA.

13. (a) Brief on the concept of switching techniques.

Or

(b) Write the advantages and disadvantages of static routing.

14. (a) Write a note on functions of transport layer.

Or

(b) Discuss in detail about mail exchange.

15. (a) What is data encryption standard? Explain in detail.

Or

(b) Describe DES algorithm.

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

Answer any THREE questions.

16. Describe the concept of OSI reference model with neat diagram.

17. Discuss in detail about cyclic redundancy check.

18. Explain the concept of classification of switching techniques.

19. Discuss in detail about the architecture and functions of SNMP.

20. Explain the concept of symmetric key encryption model.

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31535

DISTANCE EDUCATION

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

Third Semester

DATA MINING AND WAREHOUSING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. Define the term OLAP.

2. List any four data mining techniques.

3. What is meant by association rule?

4. Write down the methods to discover association rules.

5. Write the names of any two algorithms for clustering data.

6. What is the use of GA?

7. Write down the types of web mining.

8. Write any four tools used for visual data mining.

9. What is big data?

10. What is hadoop?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Define and explain briefly about data warehouse.

Or

(b) Write short notes on different forms of knowledge.

12. (a) Brief on apriori algorithm.

Or

(b) Brief on partition algorithm.

13. (a) Explain briefly about clustering paradigms.

Or

(b) What is DBSCAN? Explain briefly.

14. (a) Explain about web content mining through an example.

Or

(b) Explain about web usage mining through an example.

15. (a) Brief on types of big data and their sources.

Or

(b) Bring out the components and limitations of Hadoop.

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

Answer any THREE questions.

16. Explain the architecture of a data warehouse and its managers.

17. Write and illustrate the working principle of FP tree growth algorithm.

18. Write and illustrate the working principle of K-means algorithm.

19. Explain the following (a) text mining (b) spatial mining.

20. Explain the core components and ecosystem of hadoop technology.

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	31541

DISTANCE EDUCATION

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

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 the questions.

1. Define IoT.

2. Describe the applications of IoT.

3. Examine whether M2M and IoT are same.

4. Define zigbee security.

5. Define arduino.

6. Differentiate raspberry with arduino.

7. Define python.

8. List the standard data types in python.

9. Recall set class in python.

10. List any 4-python package for IoT.

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain in Logical design of IoT. Illustrate with diagram.

Or

(b) Write about the IoT enabling technologies.

12. (a) Illustrate in detail about the architecture of SDN.

Or

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

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

Or

(b) Design a smart lighting system using IoT device.

14. (a) What are the different methods to insert values int the List?

Or

(b) Write a python program to count all the items in a list.

15. (a) Explain the string function in python with an example.

Or

(b) Discuss the following : (i) JSON (ii) XML.

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

Answer any THREE questions.

16. Write in detail about the IoT architecture.

17. Brief the IoT platform design methodology in detail.

18. What are control statements? What are the different types of decision control statements?

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

20. Formulate how to implement IoT with python with example.

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	31542

DISTANCE EDUCATION

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

Fourth Semester

ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. What is AI technique?

2. What do you mean by problem reduction?

3. Define frame problem.

4. What is predicate logic?

5. Compare soft computing vs hard computing.

6. Define artificial neural network.

7. Mention the properties of fuzzy set.

8. What are the features of membership function?

9. Mention the application of fitness function in genetic algorithm.

10. What are the various genetic operators?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Explain problem characteristics and production system characteristics.

Or

(b) Explain about constraint satisfaction method.

12. (a) How will you represent instance and ISA relationships in predicate logic?

Or

(b) Compare procedural knowledge vs declarative knowledge.

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

Or

(b) Explain the features of Hebb network.

14. (a) Describe the operations of Fuzzy set.

Or

(b) Explain about Artificial Neural Network.

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

Or

(b) Write about Fuzzy equivalence and tolerance relation.

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

Answer any THREE questions.

16. Explain the algorithm for Hill climbing.

17. How knowledge is represented using rules? Explain.

18. Describe the architecture of ANN.

19. Explain the methods for fuzzification and defuzzification.

20. Describe the basic terminologies of genetic algorithm.

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	31543

DISTANCE EDUCATION

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

Fourth Semester

BIG DATA ANALYTICS AND R PROGRAMMING

(CBCS 2020 – 2021 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

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

Answer ALL the questions.

1. Write down any two big data challenges.

2. What is Hadoop?

3. What is NoSQL?

4. How user ratings helps for system recommendation?

5. Write down the difference between document database and graph database.

6. What is called column store database?

7. Write down the syntax to write comments in R with suitable examples.

8. What is the usage of break statement in R?

9. Write down the difference between vector and list.

10. What is called data frames in R?

SECTION B — ($5 \times 5 = 25$ marks)

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

11. (a) Describe the properties of a big data system.

Or

(b) Write short notes on types of big data.

12. (a) Explain about the new software pack system.

Or

(b) Difference between the features of SQL and NoSQL with examples.

13. (a) Explain briefly the components of NoSQL data architectural patterns.

Or

(b) Difference between the features of SQL and NoSQL with examples.

14. (a) Explain any five string manipulation in R with suitable examples.

Or

(b) Write down the syntax of looping statement with suitable examples.

15. (a) Write short notes on operations in matrix in R with example code.

Or

(b) Write a R script to add rows and columns in array.

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

Answer any THREE questions.

16. Discuss about traditional versus big data approach.

17. Explain in detail about the applications of nearest neighbor search.

18. Discuss about various of NoSQL architectural patterns.

19. Explain in detail about data frame creation and its structure. Give example in R script.

20. Explain in detail about decision making and control statements in R with proper script.

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	31544

DISTANCE EDUCATION

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

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 the questions.

1. What is called a 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 is the term called site maps?

6. List out some the 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 an emulator and its usage.

SECTION B — ($5 \times 5 = 25$ marks)

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

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

Or

(b) Write in short about the types of mobile OS.

12. (a) Explain briefly on 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) Elucidate about 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 on android SDK.

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

Answer any THREE questions.

16. Describe in detail about the mobile eco system.

17. Elaborate about utility apps.

18. Explain in detail about the mobile information architecture.

19. Enunciate in detail about MIDlet programming.

20. Explain in detail about android AVD.

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