S–6167

Sub. Code
23BAI1C1

B.Sc. DEGREE EXAMINATION, APRIL 2025

First Semester

Artificial Intelligence

PROGRAMMING FOR PROBLEM SOLVING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. List out the basic components of a computer.

2. How will you define variables?

3. What do you mean by a keyword?

4. Provide the usage of unary operator in 'C' programming language.

5. Does 'C' programming language support two-dimensional arrays?

6. Provide an example for using a multi-dimensional array in 'C'.

7. How will you declare a function in 'C'?

8. Can we pass arguments to a 'C' function?

9. What are structures in 'C'?

10. Provide a coding example for pointers in 'C'.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write down the disadvantages of programming languages.

Or

(b) List the types of programming languages.

12. (a) With examples, discuss about logical operators in 'C'.

Or

(b) Discuss about the 'For' statements in 'C'.

13. (a) Write a program in 'C' for sorting algorithm.

Or

(b) How will you define a string in 'C'? Explain.

14. (a) Provide the details of access methods for a 'C' function.

Or

(b) Explain about passing arguments to a function.

15. (a) Write about declaring structures in 'C' with examples.

Or

(b) Provide a definition of processing a structure with example code.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss in detail debugging techniques.

17. Bring out a detailed study on the various datatypes in 'C' with examples.

18. Describe with examples the processing of strings in 'C'.

19. Write and explain a 'C' program that demonstrates the use of recursion using functions.

20. Elaborate array of structures in detail.

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S–6168

Sub. Code
23BAI1S1

B.Sc. DEGREE EXAMINATION, APRIL 2025

First Semester

Artificial Intelligence

FUNDAMENTALS OF INFORMATION TECHNOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Which combination of keys are called modifier keys?
2. List any two output devices of a modern day computer.
3. How do you open a saved word document?
4. Provide the uses of numbering in a word document.
5. Show the steps involved in saving a spreadsheet.
6. When will you use a histogram?
7. Differentiate data and field.
8. Why do we need constraints?
9. Write any two uses of slides.
10. Can we use predefined templates for slides in PowerPoint?

Part B (5 × 5 = 25)

Answer **all** the questions choosing either (a) or (b).

11. (a) Write a note on notebook computers.

Or

(b) Bring out the advantages of using an operating system.

12. (a) Show the steps involved in the grammar check in a word document.

Or

(b) With necessary examples, explain the four types of text alignments.

13. (a) Elaborate in brief, how to include footers in a excel spreadsheet.

Or

(b) Does spreadsheet have find and replace? Explain.

14. (a) In what way data are managed in a database? Explain.

Or

(b) Has indexing been included in a database? Elaborate.

15. (a) Explain the need for animating slides in PowerPoint.

Or

(b) How will you explain the different views in PowerPoint?

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Why do home users need computers? Elaborate in detail.

17. Bring out a detailed study on the aspects involved in printing a document.

18. Elucidate in detail the preparation of financial statements.

19. Describe with examples the use of creating menu driven applications using MS-Access.

20. Discuss the steps involved in including multimedia content in PowerPoint slides.

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S–6169

Sub. Code
23BAI1FC

B.Sc. DEGREE EXAMINATION, APRIL 2025

First Semester

Artificial Intelligence

OFFICE AUTOMATION

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define CPU and its components.
2. What is a database management system (DBMS)?
3. Explain the difference between RAM and ROM.
4. How do you create a new document in MS Word?
5. What are the basic steps to create a chart in Excel?
6. Define the term 'Operating System'.
7. What is the purpose of a spell checker in a word processor?
8. Explain the use of Slide Transition in PowerPoint.
9. What is the function of the Primary Key' in a database?
10. How can you format a paragraph in MS Word?

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss the role of input and output devices in a computer system.

Or

(b) Explain the different formatting options available in MS Word.

12. (a) Describe the process of creating and using formulas in Excel.

Or

(b) Explain the importance of data sorting and filtering in a spreadsheet.

13. (a) Discuss the process of creating a query in MS Access.

Or

(b) Explain how to generate reports using a database management system.

14. (a) Illustrate the steps involved in creating a presentation in PowerPoint.

Or

(b) Explain the use of animation effects. PowerPoint presentations.

15. (a) Discuss the key features of Windows as an operating system.

Or

(b) Explain the role of database management in office automation.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Evaluate the advantages and disadvantages of using spreadsheets for data analysis.

17. Analyze the impact of office automation tools on productivity in a modern workplace.

18. Design a comprehensive database for managing student records in an educational institution and discuss its implementation.

19. Discuss the evolution of operating systems and their significance in office automation.

20. Propose a strategy for implementing office automation toots in a small business, considering both benefits and challenges.

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S–6174

Sub. Code
23BAI2C1

B.Sc. DEGREE EXAMINATION, APRIL 2025

Second Semester

Artificial Intelligence

PYTHON PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is the function of the assignment statement in Python?
2. Describe the role of type conversion in mixed-mode arithmetic expressions.
3. List the basic control statements used in Python.
4. What is the significance of the main( ) function in a Python script?
5. What is an escape sequence? Provide two examples.
6. Explain the difference between reading a file in text and binary in Python.
7. What method would you use to remove an element from a list in Python?
8. Describe how a dictionary differs from a list in Python.
9. What is the purpose of the try-except block in Python?
10. Explain the difference between a syntax error and an exception in Python.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write a Python program that calculates the area of a circle given its radius, demonstrating the use of arithmetic expressions.

Or

(b) Compare and contrast integer division and floating-point division in Python with examples.

12. (a) Create a Python function that checks whether a given number is even or odd and use it in a program to test multiple numbers.

Or

(b) Discuss the importance of program structure and formatting in Python, especially when using modules and functions.

13. (a) Write a Python program that counts the number of vowels in a given string.

Or

(b) How does Python handle reading large text files? Discuss with respect to memory management and tile handling techniques.

14. (a) Write a Python script to merge two lists into a single list without duplicates.

Or

(b) Examine the use of dictionaries for storing and retrieving data efficiently, providing examples of their application in real-world scenarios.

15. (a) Write a Python program that handles division by zero using exception handling.

Or

(b) Discuss the role of the finally block in Pythons exception handling mechanism. Provide an example to illustrate its use.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Critically analyze how different data types (integers, floats, and strings) are handled in Python, providing examples of potential pitfalls and best practices.

17. Write a Python script that simulates a simple calculator using a menu-driven approach. The user should be able to choose from basic arithmetic operations (addition, subtraction, multiplication, division).

18. Evaluate the pros and cons of using text files for data storage in Python applications, providing examples of scenarios where text files are advantageous or disadvantageous.

19. Develop a Python program that uses a dictionary to manage a simple contact list. The program should allow the user to add new contacts, search for a contact by name, and display all contacts.

20. Develop a Python program that reads data from a file and processes it. Implement exception handling to manage scenarios such as the file not being found, data conversion errors, and any other potential issues.

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S–6175

Sub. Code
23BAI2S1

B.Sc. DEGREE EXAMINATION, APRIL 2025

Second Semester

Artificial Intelligence

INTRODUCTION TO HTML

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Name two elements of an HTML document.
2. What does HTTP stand for?
3. Define the <hl> tag and its significance in an HTML document.
4. Explain the function of the <small> tag in HTML.
5. What is the purpose of the <marquee> tag?
6. Describe how to create a hyperlink using the <a> tag.
7. Define the <try> tag and its role in a table.
8. Explain the difference between cell alignment and table alignment.
9. What is the function of the <select> tag in an HTML form?
10. Explain the purpose of the <frameset> tag versus the <iframe> tag.

Part B (5 × 5 = 25)

Answer **all** the questions choosing either (a) or (b).

11. (a) Explain the role of the <title> tag in an HTML document. Why is it important for web browsers?

Or

(b) Compare the roles of the Internet and a web browser in accessing and displaying web content.

12. (a) Analyse how block-level elements like <hl> and <p> contribute to the structure and readability of a webpage.

Or

(b) Compare the usage and effects of the <b> and tags in HTML.

13. (a) Write an HTML code to create a webpage that includes an ordered list and an unordered list.

Or

(b) Compare the visual and functional differences between ordered and unordered lists in HTML.

14. (a) Write an HTML code to create a table with aligned content and a caption. Include an example of cell padding.

Or

(b) Explain the purpose of the <caption> tag in an HTML table, and provide an example of how it is used.

15. (a) Write an HTML code to create a form with text input, a password input, and a submit button.

Or

(b) Compare the functionality of the <select> tag with the <input type="radio"> tag in an HTML form.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Design a simple webpage layout using HTML tags and explain how each tag contributes to the overall structure.

17. Create a webpage structure using the <html>, <head> and <body> tags, including a heading and two paragraphs. Explain the role of each tag in forming the document structure.

18. Evaluate the use of the <hr>, <br> and <img> tags in improving the layout and readability of a webpage.

19. Create an HTML table that includes rowspan, colspan, and cell padding. Explain the role of each attribute in organizing the table content.

20. Develop a form using HTML that includes text inputs, a textarea and a dropdown select box with options.

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S–6176

Sub. Code
23BAI2S2

B.Sc. DEGREE EXAMINATION, APRIL 2025

Second Semester

Artificial Intelligence

MULTIMEDIA SYSTEMS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Define multimedia.
2. Explain the significance of fonts in multimedia projects.
3. What is hypertext?
4. Describe the importance of color in image processing.
5. List the common image file formats.
6. Explain the term “Digital Audio.”
7. What are the basic principles of animation?
8. Define “Digital Video Containers.”
9. What are the intangible needs in multimedia projects?
10. Describe the role of an authoring system in multimedia production.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Explain the different text font editing and design tools use in multimedia.

Or

(b) Discuss the advantages and disadvantages of hypermedia.

12. (a) Describe the process of making still images for multimedia projects.

Or

(b) Explain the concept and applications of MIDI in multimedia systems.

13. (a) Discuss the principles of animation that ensure effective motion in multimedia.

Or

(b) How can sound be added effectively to a multimedia project?

14. (a) Explain the steps involved in shooting and editing a video for a multimedia project.

Or

(b) What are the key considerations when selecting hardware for a multimedia project?

15. (a) Describe the stages of a multimedia project from planning to execution.

Or

(b) Explain the role and responsibilities of a multimedia production team.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Analyze the use of text in multimedia, focusing on how it affects user experience.

17. Evaluate the importance of sound in multimedia projects and suggest best practices for integrating sound.

18. Discuss the various phases of a multimedia project, emphasizing the role of teamwork.

19. Compare and contrast different digital video containers, focusing on their pros and cons.

20. Design a simple multimedia project outline, detailing the tools and technologies you would use.

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S–6177

Sub. Code
23BAI3C1

B.Sc. DEGREE EXAMINATION, APRIL 2025

Third Semester

Artificial Intelligence

OBJECT ORIENTED PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. What is a class in Java?
2. Define inheritance and its importance in OOP.
3. What is the difference between JDK and JVM?
4. Explain the concept of method overloading.
5. What are access modifiers in Java?
6. Describe the purpose of the 'super' keyword in Java.
7. Define-an interface and its use in lava.
8. What is exception handling and why is it important?
9. Explain the concept of multithreading in Java.
10. What is the difference between an ArrayList and an array in Java?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss how control statements are used in Java with examples.

Or

(b) Explain the concept of garbage collection in Java and its significance.

12. (a) Describe the process of creating a thread in Java and its life cycle.

Or

(b) Compare method overriding and method overloading with examples.

13. (a) Analyze the role of exception handling in robust software development.

Or

(b) Discuss the significance of packages in Java.

14. (a) Explain the concept of boxing and unboxing with examples.

Or

(b) Describe how to handle file input and output in Java.

15. (a) Discuss the MVC design pattern and its application in Java.

Or

(b) Explain the process of creating a simple Swing application.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Critically evaluate the principles of Object-Oriented Programming and their implementation in Java.

17. Design a Java program using inheritance to simulate a simple banking system. Explain your code.

18. Analyze the impact of multithreading on application performance with examples.

19. Discuss the importance of design patterns in software development and illustrate with examples.

20. Develop a Java application that uses exception handling and file handling to manage user data.

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S–6178

Sub. Code
23BAI3C2

B.Sc. DEGREE EXAMINATION, APRIL 2025

Third Semester

Artificial Intelligence

DATA STRUCTURES AND ALGORITHMS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Define Abstract Data Type (ADT).
2. What is a linked list? Explain its types.
3. List the operations possible on a stack.
4. Explain the concept of recursion with an example.
5. What is the time complexity of Bubble Sort?
6. Describe the process of converting an infix expression to a postfix expression.
7. What is a binary tree traversal? List its types.
8. Define and differentiate between depth-first search (DFS) and breadth-first search (BFS).
9. What are AVL Trees?
10. Explain the significance of space-time trade-off in algorithms.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the array-based implementation of a queue ADT.

Or

(b) Discuss the applications of a stack in real-life scenarios.

12. (a) Describe the linked list implementation of stack and queue ADTs.

Or

(b) Explain the concept of circular linked list and its applications.

13. (a) Compare and contrast merge sort and quicksort.

Or

(b) Discuss the steps involved in the implementation of binary search trees (BST),

14. (a) Illustrate the use of recursion in solving the Tower of Hanoi problem.

Or

(b) Explain the priority queue and its implementation using binary heaps.

15. (a) Describe the algorithm for Depth-First Search (DFS) on a graph.

Or

(b) Explain the working of B-trees and their applications.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss in detail the algorithmic problem-solving approach, including the analysis of algorithms.

17. Design a data structure using a doubly linked list to implement a text editor and explain its operations.

18. Evaluate the trade-offs between different sorting algorithms based on time and space complexities.

19. Propose an optimized algorithm for balancing binary search trees and discuss its implementation.

20. Analyze the role of graphs in computer science, focusing on their applications in real-world problems.

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	23BAI3S1

B.Sc. DEGREE EXAMINATION, APRIL 2025

Third Semester

Artificial Intelligence

WEB DESIGNING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Define Cascading Style Sheets (CSS).
2. Identify the purpose of XML in web development
3. List the properties of the Box Model in CSS.
4. Describe the concept of a Navigation Bar in CSS.
5. What is the Document Object Model (DOM)?
6. Explain event bubbling in Dynamic HTML.
7. What is JavaScript, and where is it primarily used?
8. Differentiate between variables and functions in JavaScript.
9. Summarize the DOM's role in web browser environments.
10. Explain the importance of form validation in JavaScript.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Compare inline and external CSS with examples.

Or

(b) Illustrate how XML can be used for data interchange.

12. (a) Analyze the importance of CSS Id and Class selectors.

Or

(b) Discuss how CSS can be used to create a page layout.

13. (a) Explain the role of DCOM in accessing HTML and CSS.

Or

(b) Describe the process of data binding in Dynamic HTML.

14. (a) Develop a simple JavaScript function to validate an email address.

Or

(b) Examine the use of loops and conditions in JavaSeript.

15. (a) Illustrate the use of JavaScript objects with examples.

Or

(b) Compare client—side scripting with server-side scripting.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the advantages of using CSS in web design.

17. Describe the steps to create a webpage layout using CSS.

18. Outline how Dynamic HTML can be used to modify webpage content.

19. Write a JavaScript program to update content dynamically based on user input.

20. Describe the method for validating forms using JavaScript.

S–6180

Sub. Code
23BAI3S2

B.Sc. DEGREE EXAMINATION, APRIL 2025

Third Semester

Artificial Intelligence

PHP PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is PHP, and what does it stand for?
2. Differentiate between XAMPP and WAMP.
3. Explain the usage of the 'if-else' statement in PHP.
4. Give syntax for 'echo".
5. What is an array in PUP?
6. Write syntax for For loop.
7. Explain the purpose of the fread function in PHP.
8. How can you check if a file exists before attempting to read it in PHP?
9. How do you start a session in PHP? Provide the syntax.
10. What PHP function is used to delete a cookie?

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) List the scope of PHP in the web development?

Or

(b) Describe the installation and configuration process of XAMPP for PHP development.

12. (a) Write a PHP program to demonstrate the use of operators in PHP.

Or

(b) Explain the importance of embedding HTML in PHP when creating dynamic web pages. Illustrate with a code example.

13. (a) Write a PHP program to sum 1 to 10 numbers using While loop.

Or

(b) Explain the use of built-in array functions in PHP with examples.

14. (a) Write a PHP program that reads data from a CSV file and displays it the table Format. Explain each step of the process.

Or

(b) Explain how you can read and process data line by line from a file using PHP. Include an example program.

15. (a) What is the use of Setcookie function with its arguments? Explain with example.

Or

(b) Compare and contrast session variables and cookies in PHP.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explore the role of NIP in the web development.

17. Create a PHP program to demonstrate the use of conditional statements.

18. Discuss the concept of arrays in PHP. Provide examples of different types of arrays and their usage.

19. Describe the process of reading data from a file in PHP using the fopen, fread. and fclose functions. Provide an example.

20. Discuss the process of managing sessions in PHP, including how to start a session, set session variables, and destroy a session. Provide examples.

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S–6181

Sub. Code
23BAI4C1

B.Sc. DEGREE EXAMINATION, APRIL 2025

Fourth Semester

Artificial Intelligence

R PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the different data types available in R?

2. How can you install and run R on your system?

3. Explain the use of the if-else control structure in R.

4. What is the purpose of the length ( ) function in R?

5. Describe how to access elements in a data frame.

6. How do you create a list in R?

7. What are factors in R and how are they used?

8. How do you calculate the cumulative sum of a vector in R?

9. What is an S Class in R?

10. Name two visualization libraries in R and their primary use.

Part B

$(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) Describe how to read and write data files in R.

Or

(b) Explain how subsetting R objects can be done with example.

12. (a) Discuss the concept of scoping rules in R with an example.

Or

(b) Explain the difference between vectors and matrices in R.

13. (a) How can you apply a function to all elements of a list? Provide an example.

Or

(b) Explain how to create and manipulate data frames in R.

14. (a) Discuss the common functions used with factors in R.

Or

(b) Describe the process of extracting subtables from a table in R.

15. (a) Explain the concept of inheritance in S Classes with an example.

Or

(b) Discuss how code profiling can be done in R for performance optimization.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the various arithmetic operations in R, including complex numbers, modulo operations, and integer quotients, with examples.

17. Discuss in detail the different vector operations in R, including generating sequences vector indexing and logical operations.

18. Describe the process of creating and managing lists in R.

19. Elaborate on the use of statistical functions in R with example.

20. Discuss object-oriented programming in .R with examples.

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S–6182

Sub. Code
23BAI4S1

B.Sc. DEGREE EXAMINATION, APRIL 2025

Fourth Semester

Artificial Intelligence

QUANTITATIVE APTITUDE

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Define HCF and LCM of numbers.
2. What is a decimal fraction? Give an example.
3. Simplify : $\left(\sqrt{64} + \sqrt{144}\right)$.
4. Calculate the average of the numbers 5, 10, 15, 20.
5. Explain Suit with an example.
6. What is the difference between simple interest and compound interest?
7. Define permutation with an example.
8. What is a logarithm? Provide the logarithmic form of $2^3 - 8$.
9. Explain the concept of probability.
10. Describe the significance of pie charts in data representation.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Calculate the percentage profit if a product is bought for Rs.500 and sold for Rs.600.

Or

(b) Solve: A train 150 meters long is running at 60 km/hr. How long will it take to cross a platform 300 meters long?

12. (a) A partnership consists of A and B investing Rs.20,000 and Rs.30,000 respectively. How will they share the profit of Rs.5,000?

Or

(b) Solve; Find the compound interest on Rs.12000 for 2 years at 5% per annum.

13. (a) A boat covers 20 km downstream in 2 hours and the same distance upstream in 5 hours. Find the speed of the boat in still water.

Or

(b) A box contains 10 red balls and 20 blue balls. What is the probability of picking a red ball?

14. (a) Explain the concept of True Discount and how it is calculated.

Or

(b) Calculate the Bankers Discount on a bill of Rs.5,000 due 4 months hence at 12% per annum.

15. (a) If January 1st, 2024, is a Monday, what day of the week will it bean March 15th, 2024?

Or

(b) How do you calculate the volume and surface area of a cylinder?

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss the steps involved in solving problems on ages and provide an example.

17. Explain the difference between Permutation and Combination with examples.

18. Describe the different types of data representation techniques and their uses.

19. Develop a strategy for solving time and work-related problems.

20. Analyze the concepts of profit, loss, and discount in business transactions with real-world examples.

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S–6183

Sub. Code
23BAI4S2

B.Sc. DEGREE EXAMINATION, APRIL 2025

Fourth Semester

Artificial Intelligence

INTRODUCTION TO DATA COMMUNICATION AND NETWORKING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define the term 'bandwidth' in the context of computer networks.

2. What is the difference between a hub and a switch in a network?

3. Define checksum.

4. Identify the techniques in Framing.

5. What is a MAC address and where is it used?

6. What is the role of a 'router' in the 'Network layer?

7. Describe the term 'QoS' in networking.

8. Outline the role of the transport layer in networking.

9. Expand DNS.

10. List any four protocols in the application layer.

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) Define a computer network and explain the different types of networks based on their size and geographic scope.

Or

(b) Compare and contrast the TCP/IP and OSI models.

12. (a) Discuss piggybacking in flow control mechanisms.

Or

(b) Explain the concept of the sliding window protocol and its significance in flow control.

13. (a) Compare and Contrast Different Types of Network Topologies for connecting LANs

Or

(b) Compare and contrast the uses of bridges, switches, and routers' in connecting LANs.

14. (a) Describe the process of unicast and multicast routing in the network layer.

Or

(b) Explain the various parameters that ensure Quality of Service.

15. (a) Outline the design principles of the Application layer in computer networks.

Or

(b) Explain the services of Email and FTP.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Elaborate the types of transmission mediums in communication networks.

17. Compare the Stop-and-Wait protocol and the Stop-and-Wait ARQ protocol.

18. Compare the services of Random Access and Controlled Access.

19. Explain the structure of an IPv6 address and compare it to an lPv4 address.

20. Discuss in detail DNS and its contributions in the Internet.

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