S-0757

Sub. Code
23BAI1C1

B.Sc. DEGREE EXAMINATION, NOVEMBER 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. What is a computer?

2. Define discrete data?

3. What do you mean by an identifier?

4. Write down the unary operator in 'C'.

5. Provide a definition of an array.

6. Show an example of a string in "C"

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

8. Give an example of a parameter in a 'C' function?

9. Write the general form of a 'C' Pointer.

10. What does a structure store internally?

Part B (5 × 5 = 25)

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

11. (a) Discuss about computer hardware.

Or

(b) Write a note on structured programming.

12. (a) With suitable examples, explain variables in 'C'.

Or

(b) How will you work with expressions in 'C'

13. (a) Provide a note on sorting algorithms.

Or

(b) Write a 'C' Program for bubble sort.

14. (a) Bring out a study on functions in 'C'.

Or

(b) Explain call by reference in 'C'.

15. (a) Create a structure in 'C'.

Or

(b) How will you dereference a pointer in 'C'?

Part C

$(3 \times 10 = 30)$

Answer **any THREE** questions.

16. Define in detail software development life cycle.

17. Explain the looping statements in 'C' with examples.

18. With a programming examples, explain the various types of arrays in 'C'.

19. How does a 'C' function work? Explain in detail with code examples.

20. Use a program to explain the entire aspects of a pointer in 'C'.

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S-0758

Sub. Code
23BAI1S1

B.Sc. DEGREE EXAMINATION, NOVEMBER 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** questions.

1. Write a note on information.

2. Write the functions of a processor.

3. Can you save text in a word document?

4. Do we have find and replace functionality in a word document?

5. How will you insert a row in an Excel sheet?

6. Provide the purpose of using formulae in excel sheet.

7. Write the use of Power Point.

8. How to delete a slide?

9. Define intranet?

10. What is the purpose of a browser?

Part B (5 × 5 = 25)

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

11. (a) Define computer hardware briefly.

Or

(b) Explain 'Monitor' as an output device.

12. (a) Explain about text manipulation in a Word document.

Or

(b) Show the importance of 'find and replace' in a word document.

13. (a) Provide the steps involved in provide formula in excel.

Or

(b) Can word documents be linked in a Excel? Explain.

14. (a) Write a note on the normal view in PowerPoint.

Or

(b) How to create slide notes? Explain.

15. (a) List down the services of intranet.

Or

(b) Discuss about search engines.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss in detail hardware and software.

17. Provide the details involved in using the mail merge functionally in a word document.

18. Bring out detailed study on exporting charts from excel to word.

19. Describe in details the steps involved in creating slide transition.

20. Elaborate on the basic components of E-Mail.

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S–0759

Sub. Code
23BAI1FC

B.Sc. DEGREE EXAMINATION, NOVEMBER 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. What are the main functions of an operating system?

2. Define the term 'database and give an example.

3. How do you save a document in M.S Word?

4. Explain the use of headers and footers in a document.

5. What is the purpose of data validation in Excel?

6. Describe the function of a scanner as an input device.

7. What are the different types of data that can be entered into an Excel cell?

8. How do you insert a new slide in PowerPoint?

9. What is the difference between sorting and filtering in Excel?

10. Explain the use of the 'Save As' feature in MS Word.

Part B

$(5 \times 5 = 25)$

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

11. (a) Explain the different types of memory in a computer system.

Or

(b) Discuss the various types of printers and their uses.

12. (a) Describe the steps involved in mail merging in MS Word.

Or

(b) Explain the importance of charts in Excel and how to create one.

13. (a) Discuss the role of database queries in managing information.

Or

(b) Explain how to create and manage tables in MS Access.

14. (a) Illustrate the steps to include multimedia objects in a PowerPoint presentation.

Or

(b) Discuss the importance of slide design and layout in presentations.

15. (a) Explain the differences between DOS and Windows operating systems.

Or

(b) Discuss the role of office automation in enhancing efficiency and productivity.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Analyze the role of databases in office automation, focusing on their impact on data management.

17. Evaluate the effectiveness of PowerPoint as a tool for business presentations.

18. Design an office automation system for managing employee records and discuss the implementation process.

19. Discuss the importance of data security in office automation and propose measures to ensure it.

20. Propose a plan for training employees in the use of office automation tools, addressing potential challenges and solutions.

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S–0763	Sub. Code 23BAIA4

U.G. DEGREE EXAMINATION, NOVEMBER 2025

Artificial Intelligence

Allied – MACHINE LEARNING BASICS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Supervised Learning.

2. What is Vapnik-Chervonenkis Dimension?

3. Write the use of Inductive bias in Decision Tree Learning?

4. List the Issues in Decision Tree Learning.

5. What is a Multilayer Network?

6. What is the Backpropagation Algorithm?

7. What is k-Means Clustering?

8. What is Expectation Maximization Algorithm?

9. What is Bayes Optimal Classifier?

10. What is Naive Bayes Classifier?

Part B (5 × 5 = 25)

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

11. (a) What is Regression in Machine Learning?

Or

(b) Summarize the working concept of Decision Tree Learning.

12. (a) How does Inductive bias affect Decision Tree Learning?

Or

(b) Outline the advantages of Decision Tree Learning

13. (a) Explain the Back propagation Algorithm in detail.

Or

(b) List the applications of Neural Networks.

14. (a) Discuss the procedure of k-Means Clustering.

Or

(b) Describe the importance of Clustering in Machine Learning.

15. (a) Analyze the working procedure of Bayes Optimal Classifier.

Or

(b) Organize the applications of Bayesian Learning.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Describe the importance of Supervised Learning in Machine Learning.

17. Explain the Issues in Decision Tree Learning with an example.

18. Analyze the importance of Neural Networks in Machine Learning.

19. Discuss the concept and types of clustering with an example.

20. Examine the importance of Bayesian Learning in Machine Learning.

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S–0765	Sub. Code 23BAI2S1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Second Semester

Artificial Intelligence

INTRODUCTION TO HTML

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define a web browser.

2. List three common web browsers.

3. What is the purpose of the <html> tag in an HTML document?

4. Define the <head> tag and its role in an HTML document.

5. Define an unordered list in HTML.

6. Explain the purpose of the <br> tag.

7. What is the purpose of the <table> tag in HTML'?

8. Explain the difference between the <td> and <th> tags.

9. What is the purpose of the <frameset> tag in HTML'?

10. Describe how the <textarea> tag is used in an HTML form.

Part B (5 × 5 = 25)

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

11. (a) Illustrate the basic structure of an HTML document with an example.

Or

(b) Compare and contrast the features of static and dynamic webpages.

12. (a) Describe the purpose and usage of the <head> and <body> tags in an HTML document.

Or

(b) Analyse the impact of using different font style tags like <big>, <small>, and <strike> in an HTML document.

13. (a) Write an HTML code to create a webpage with an unordered list and a hyperlink to another website.

Or

(b) Compare the usage of the <hr> and <br> tags in HTML, explaining how they affect the structure of a webpage.

14. (a) Write an HTML code to create a basic table with three rows and two columns, including a table caption.

Or

(b) Analyse how colspan and rowspan affect the structure of a table with an example.

15. (a) Write an HTML code that demonstrates a simple frameset with two frames and a targeted link.

Or

(b) Analyse the differences between the <select> and <textarea> tags in HTML forms with examples.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Create a basic webpage using HTML that includes a title, heading and two paragraphs. Explain how each part of the code works.

17. Create an HTML page with a main heading (<h1>), a subheading (<h2>), and a paragraph where some text is marked as <b> and other text as <i>. Explain how these tags affect the appearance of the text.

18. Create an HTML document that includes a heading, a nested list (ordered within unordered), a horizontal line, and an image. Explain how each tag is used to structure and display the content.

19. Evaluate the importance of table alignment and cell padding in enhancing the readability and presentation of data in a webpage.

20. Evaluate the advantages and limitations of using frames in modern web design.

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S–0767	Sub. Code 23BAI3C1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Artificial Intelligence

OBJECT ORIENTED PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is java?

2. How do you compile a java program?

3. Show a definition of a class in java.

4. Provide the use of JDK.

5. Write the use of 'try' keyword in java.

6. Define multi-threading in java.

7. What do you mean by input stream?

8. Where does the file class reside?

9. How does design patters work?

10. Write about software development process.

Part B (5 × 5 = 25)

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

11. (a) List the supported array types of java.

Or

(b) Write about function call in java.

12. (a) Explain the various of installing and working with java.

Or

(b) Discuss about constructors in java.

13. (a) How does java handle exceptions? Explain.

Or

(b) Describe about extending the Thread class in java.

14. (a) Define the work of System in input stream in java.

Or

(b) Why file handling required in java? Explain.

15. (a) Discuss about graphical programming.

Or

(b) How does design patterns help in delivering better software?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. List and explain in detail control statements in java.

17. Describe in detail with examples overloading methods in java.

18. Bring out a detailed study on multi-threading in java.

19. Discuss in detail generics in java.

20. Elaborate on the software design patterns in java in detail.

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S–0768	Sub. Code 23BAI3C2

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Artificial Intelligence

DATA STRUCTURES AND ALGORITHMS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is data structure?

2. Define data abstraction.

3. How will you define efficient access as a characteristic in linear data structure?

4. Explain arrays in linear data structure.

5. What can a node contain?

6. Write the two types of circular linked list.

7. If data elements are not arranged sequentially, what is it called?

8. In what order does the in order traversal visit the node?

9. Which data structure contain a node and an edge?

10. List the two common ways to represent a graph.

Part B (5 × 5 = 25)

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

11. (a) Explain abstract data type model.

Or

(b) What is the need for algorithms? Explain.

12. (a) With examples, explain stacks.

Or

(b) Discuss prefix notation with suitable examples.

13. (a) Write the traversal of singly linked list.

Or

(b) Elaborate on circular singly linked list.

14. (a) Bring out a note on trees in data structures.

Or

(b) Draw and explain binary tree data structure.

15. (a) Provide the applications of graph data structure.

Or

(b) Explain the adjacency matrix representation.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Bring out a detailed study on asymptotic notations.

17. Elaborate on linked lists in detail with examples.

18. Elucidate in detail on bubble sort.

19. Discuss in detail AVL tree data structure.

20. Explain depth first search in detail.

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S–0769	Sub. Code 23BAI3S1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Artificial Intelligence

WEB DESIGNING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Expand CSS.

2. What is the use of DHTML?

3. A CSS rule consists of what blocks?

4. Provide an example of using comments in CSS.

5. Write a definition for DOM.

6. How will you define class identifier?

7. Can JavaScript be called as a programming language?

8. Discuss the use of 'return' statement in JavaScript.

9. What does an object literal contain?

10. Do we have methods in a JavaScript object?

Part B (5 × 5 = 25)

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

11. (a) Provide the uses of DHTML.

Or

(b) List the steps involved in including a style sheet.

12. (a) Write a note on the concept of CSS.

Or

(b) Explain the working of CSS with HTML Lists.

13. (a) List out the key features of DHTML.

Or

(b) Define the disadvantages of DHTML.

14. (a) With examples, explain the declaration of variables in JavaScript.

Or

(b) Provide the syntax of a JavaScript function and explain.

15. (a) Create a JavaScript object using code example.

Or

(b) How will access Properties in a JavaScript Object?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Create a web page that links an external CSS file for its style.

17. With examples, explain in detail CSS Id and class.

18. Discuss in detail the DCOM architecture.

19. Bring out a detailed study on the client-side scripting.

20. Elaborate on the relationship between DOM and web browser environments.

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S–0770	Sub. Code 23BAI3S2

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Artificial Intelligence

PHP PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is the acronym of PHP?

2. Is PHP a Open source scripting language?

3. Which PHP tag is used to write code?

4. Write the two special characters that are used for single line comment in PHP.

5. Do we have an alternate to if..else in PHP?

6. Provide the use of 'default' keyword in PHP.

7. Does PHP support file handling.

8. What is the use of 'fopen( )' in PHP?

9. How do you start a session in PHP?

10. Can we access session data?

Part B (5 × 5 = 25)

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

11. (a) Write a note on dynamic web sites.

Or

(b) What can PHP do? Explain.

12. (a) How will you embed PHP in HTML? Explain.

Or

(b) List the data types supported by PHP.

13. (a) Draw a flowchart for the 'switch' statement in PHP.

Or

(b) Provide a note on PHP functions.

14. (a) Show the common functions used for file handling in PHP.

Or

(b) Write and explain the PHP code for opening and closing a file.

15. (a) What is a session? Explain.

Or

(b) How will you store session data in PHP? Explain.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Provide the use of XAMPP and its working procedure in detail.

17. Elaborate on the use of conditional statements in PHP using code examples.

18. Bring out a detailed study on the PHP 'while' loop with examples.

19. Describe in detail on fetching data from a file using PHP code examples.

20. Elucidate on the use of session in PHP with codes.

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S–0771	Sub. Code 23BAI4C1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Fourth Semester

Artificial Intelligence

R PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What are complex numbers in R, and how are they represented?

2. Explain the purpose of the round() function in R.

3. What is the difference between for and while loops in R?

4. How do you define a function in R? Provide the basic syntax.

5. How can you delete an element from a list in R?

6. What is the purpose of the nrow() and ncol() functions in data frames?

7. How can you create a table from a factor in R?

8. What is the max() function used for in R?

9. What is a generic function in R, and how is it used?

10. Explain the purpose of simulation in statistical analysis with R.

Part B (5 × 5 = 25)

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

11. (a) Explain the different types of operators in R with examples.

Or

(b) Describe the process of assigning values to variables in R and how variable names are handled.

12. (a) What are the different ways to generate sequences in R? Provide examples.

Or

(b) Discuss the concept of vector recycling in R with appropriate examples.

13. (a) How can you manipulate a data frame by adding or deleting rows and columns? Provide examples.

Or

(b) Discuss the use of the apply() function in R for matrix-like operations.

14. (a) Explain how to work with levels in a factor in R. Provide examples.

Or

(b) Discuss how to find the largest cells in a table in R and provide an example.

15. (a) How can you implement a generic function in an S Class in R? Provide an example.

Or

(b) Discuss the importance of data manipulation in R and provide examples of common data manipulation tasks.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss in detail the process of reading and writing different types of data files in R.

17. Explain how matrices and arrays can be created and manipulated in R.

18. Describe the differences between lists and data frames in R.

19. Explain how to perform mathematical operations on tables in R with examples.

20. Discuss the key concepts of object-oriented programming in R. focusing on the creation and use of S Classes with examples.

S–0772

Sub. Code
23BAI4S1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Fourth Semester

Artificial Intelligence

QUANTITATIVE APTITUDE

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define average and give an example.
2. What is the square root of 81?
3. Calculate the HCF of 24 and 36.
4. Explain the concept of percentage with an example.
5. Simplify : $\frac{4}{5} x \frac{5}{8}$.
6. What is a simple interest and how is it different from compound interest?
7. Describe the concept of ratio and proportion.
8. What is the significance of logarithms in calculations?
9. Define and differentiate between permutation and combination.
10. Explain how data can be represented using line graphs.

Part B (5 × 5 = 25)

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

11. (a) A number is increased by 20% and then decreased by 10%. What is the final percentage change?

Or

(b) Solve: A pipe can fill a tank in 6 hours and another pipe can empty the tank in 9 hours. If both pipes are opened simultaneously, how long will it take to fill the tank?

12. (a) A train covers a distance of 600 km in 5 hours. What is its speed in km/hr?

Or

(b) Calculate the compound interest on Rs. 15,000 for 3 years at 4% per annum.

13. (a) Explain the concept of Surds and how to simplify them.

Or

(b) A card is drawn from a pack of 52 cards. What is the probability that the card drawn is an Ace?

14. (a) How do you calculate the area and perimeter of a rectangle? Provide an example.

Or

(b) Discuss the concept of Banker's Discount with an example.

15. (a) At what time between 3:00 and 4:00 will the hands of a clock form a right angle?

Or

(b) Calculate the surface area and volume of a sphere.

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

Answer any **three** questions.

16. Discuss the steps involved in calculating compound interest with an example.

17. Explain the role of probability in decision-making processes with examples.

18. Describe the application of data representation techniques in analyzing business data.

19. Develop strategies to solve problems related to time and distance.

20. Analyze the role of discounts in pricing strategies for businesses.

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S–0774	Sub. Code 23BAI5C1

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Fifth Semester

Artificial Intelligence

INTELLIGENT SYSTEMS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is Artificial Intelligence? Mention two of its problem characteristics.

2. What is means-end analysis? Give a simple example.

3. Differentiate between the Frame problem and the Qualification problem in AI.

4. Write a simple rule-based system example for any domain (e.g., medical or animal identification).

5. Compare procedural knowledge with declarative knowledge for a task.

6. What is Forward Chaining? Mention one situation where it is useful.

7. Define a Fuzzy Set. How does it differ from a classical set?

8. Compute the output of a perceptron for given inputs and weights.

9. List any two robotic sensors with their functions.

10. How is robot perception related to robot hardware?

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

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

11. (a) Compare and contrast two different AI problem-solving techniques, evaluating their strengths and weaknesses with examples.

Or

(b) Design a production system for a specific problem and explain the role of its characteristics in the system's operation.

12. (a) Develop an argument for why different representations are necessary in AI, providing examples of how each representation addresses specific problems.

Or

(b) Given a set of logical statements, use computable functions and predicates to demonstrate how an AI system can derive new conclusions.

13. (a) Analyze the advantages and limitations of using rules for knowledge representation, providing specific examples.

Or

(b) Evaluate the syntactic and semantic spectrum of representation and discuss the trade-offs between them.

14. (a) Design a simple fuzzy expert system for a specific task and explain how it uses fuzzy logic to make decisions.

Or

(b) Compare and contrast forward and backward chaining, discussing which would be more suitable for different types of problems.

15. (a) Explain the architecture of a perceptron and evaluate its limitations, proposing how these can be overcome.

Or

(b) Given a robotics application, discuss the required hardware and explain how perception plays a crucial role in its functionality.

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

Answer any **three** questions.

16. Design a detailed plan for an Al system to solve a complex problem (e.g., a chess game or a navigation task), explaining how heuristic search techniques would be employed to optimize the solution.

17. Critically analyze various knowledge representation issues, providing detailed examples for each issue and discussing how they impact the development of an intelligent system.

18. Using a real-world scenario, create a knowledge base using rules, explaining the procedural and declarative knowledge involved and how they interact.

19. Explain the detailed design and working of a fuzzy expert system for a given problem (e.g., controlling a home thermostat or a self-driving car's speed). Evaluate its advantages over a traditional expert system.

20. Explain the architecture of both a neural network and a robotic system, analyzing how they can be integrated to create a more intelligent and autonomous robot.

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S–0775	Sub. Code 23BAI5C2

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Fifth Semester

Artificial Intelligence

INTRODUCTION TO MACHINE LEARNING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define Machine Learning.

2. Mention any two characteristics of machine learning tasks.

3. What is Binary Classification?

4. Define Overfitting in machine learning.

5. What is the role of the Perceptron in machine learning?

6. State one use of Support Vector Machines (SVM).

7. Define Nearest Neighbor Classification.

8. Mention any two applications of K-Means clustering.

9. What is the purpose of Decision Trees in machine learning?

10. Define Ensemble Learning.

Part B (5 × 5 = 25)

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

11. (a) Classify different types of machine learning and illustrate each type with relevant real-world examples.

Or

(b) Analyze the role of feature construction, transformation, and selection in improving model accuracy.

12. (a) Apply appropriate metrics to evaluate classification performance using sample datasets.

Or

(b) Compare and contrast the key concepts involved in multiclass classification with binary classification.

13. (a) Demonstrate how kernel methods can be used to handle non-linear data, including an example transformation.

Or

(b) Illustrate the working of the Perceptron algorithm through a step-by-step classification example.

14. (a) Differentiate between K-Means and K-Medoids clustering algorithms and justify which one is more effective for noisy datasets.

Or

(b) Construct a hierarchical clustering dendrogram from a given dataset and interpret the result.

15. (a) Develop a decision tree model for a given problem scenario and justify the splitting criteria chosen.

Or

(b) Evaluate the effectiveness of Ensemble Learning techniques compared to individual models.

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

Answer any **three** questions.

16. Design a machine learning pipeline that incorporates feature construction and transformation and demonstrate its effect on model performance using examples.

17. Critically evaluate different methods of assessing classification performance, integrating concepts of multiclass classification and probability estimation.

18. Analyze and compare Linear Models and Probabilistic Models by applying Linear Regression and Support Vector Machines to a real or hypothetical dataset.

19. Implement and evaluate distance-based models such as the Nearest Neighbors algorithm and distance-based clustering for a given dataset.

20. Propose and justify the use of rule-based and tree-based models for a specific application, incorporating association rule mining and decision tree methods.

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S–0776	Sub. Code 23BAI5C3

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Fifth Semester

Artificial Intelligence

NATURAL LANGUAGE PROCESSING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What are the key components of words?

2. Name two challenges in finding the structure of words.

3. Explain a parsing algorithm for syntactic structure.

4. What is a “treebank” in NLP?

5. What are some key issues in semantic interpretation?

6. How does a system paradigm work in semantic interpretation?

7. Define predicate-argument structure in Natural Language Processing.

8. What is the importance of meaning representation in NLP?

9. Explain the concept of “cohesion” in discourse processing.

10. What is an N-gram model?

Part B (5 × 5 = 25)

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

11. (a) Analyze the complexities associated with different NLP approaches.

Or

(b) Examine the issues and challenges in identifying the structure of words.

12. (a) Illustrate the different representations of syntactic structure with suitable examples.

Or

(b) Differentiate among various parsing algorithms used in natural language processing.

13. (a) Demonstrate the process of semantic interpretation with an example.

Or

(b) Evaluate the effectiveness of cross-lingual semantic modeling.

14. (a) Briefly explain how software systems handle predicate—argument structures.

Or

(b) List and explain the key components of meaning representation in NLP.

15. (a) Assess the effectiveness of various discourse processing techniques.

Or

(b) Propose strategies to address language-specific modeling problems.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Critically evaluate the structure of words and their components, highlighting the key challenges in word analysis.

17. Compare and analyze different parsing algorithms, discussing their applications with treebanks and natural language.

18. Examine and justify the role of semantic interpretation and system paradigms in NLP.

19. Narrate the concept of predicate–argument structure in detail. Illustrate with examples from natural language sentences.

20. Analyze the concept of discourse processing by focusing on cohesion and reference resolution and demonstrate with real examples.

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S–0778

Sub. Code
23BAI5E2

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Fifth Semester

Artificial Intelligence

Elective – IOT AND ITS APPLICATIONS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define the Internet of Things (IoT).

2. Mention any two challenges in IoT related to security and privacy.

3. What is M2M communication?

4. List any two principles of IoT architecture.

5. What is an IoT reference model?

6. Differentiate between Functional View and Information View in IoT architecture.

7. Give two examples of Smart IoT applications.

8. What is Brownfield IoT?

9. State any two privacy issues in IoT.

10. What is meant by Data Aggregation in IoT?

Part B (5 × 5 = 25)

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

11. (a) Explain the vision and objectives of the IoT universe.

Or

(b) Discuss the role of data management in IoT.

12. (a) Describe the concept of M2M to IoT transition with examples.

Or

(b) Write short notes on IoT Value Chains and their importance.

13. (a) Explain the IoT Reference Architecture and its components.

Or

(b) Describe the Functional View and Information View in IoT architecture.

14. (a) Discuss Brownfield IoT and its industrial significance.

Or

(b) Explain IoT applications in the Oil and Gas industry.

15. (a) Summarize the privacy and security contributions from FP7 projects.

Or

(b) Explain the concept of "Data Aggregation for IoT in Smart Cities".

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the vision, applications, and challenges of the Internet of Things (IoT). Discuss the importance of security, privacy, and trust in IoT.

17. Describe the evolution from M2M to IoT. Explain IoT value chains and the role of global value chains in shaping IoT industries.

18. Illustrate the IoT Reference Architecture in detail with functional view, information view, and operational view.

19. Discuss various IoT applications in industry with suitable examples. Explain how IoT creates value in sectors like Retail, Oil & Gas, and Smart Homes.

20. Analyze the major privacy, security, and governance issues in IoT. How can data aggregation and secure platforms help overcome these issues?

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S–0779	Sub. Code 23BAI5E3

B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Fifth Semester

Artificial Intelligence

Elective – SOFTWARE PROJECT MANAGEMENT

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What are the key competencies in software project management?

2. List two product development techniques.

3. What is a project portfolio management process?

4. State the primary goal and scope of software project planning.

5. What are the three main components of software size and reuse estimation?

6. What is an effort measure?

7. List two project management resource activities.

8. What is the purpose of brainstorming?

9. List two software quality assurance goals.

10. What are the benefits of proper planning and organizing?

Part B (5 × 5 = 25)

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

11. (a) Apply your knowledge of software development to compare different process models (e.g., Waterfall, Agile, Spiral) with their applications.

Or

(b) Analyze the phases of the Product Development Life Cycle and explain how they ensure product quality.

12. (a) Demonstrate the key processes involved in managing a project domain with a suitable example.

Or

(b) Evaluate different approaches to constructing a Work Breakdown Structure (WBS) and justify the most effective one for large-scale projects.

13. (a) Analyze the use of COCOMO II and SLIM models in software cost estimation, highlighting their differences.

Or

(b) Design an organizational planning chart by assigning project roles and identifying necessary skills.

14. (a) Compare PERT and CPM scheduling techniques and analyze their usefulness in project management.

Or

(b) Apply scheduling techniques to map a project plan into a real calendar with milestones.

15. (a) Evaluate the role of SEI CMM Guidelines in improving software process maturity.

Or

(b) Examine the legal issues in software development (IPR, licensing, contracts) and suggest measures to overcome them.

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

Answer any **three** questions.

16. Analyze the core competencies required in software project management and evaluate how the Product Development Life Cycle supports them.

17. Apply different project selection models and financial evaluation methods (e.g., NPV, ROI, Payback period) to a real-world case study.

18. Evaluate the strengths and weaknesses of various cost estimation techniques, with emphasis on the COCOMO models.

19. Design a resource management plan that integrates brainstorming, manpower allocation, and scheduling for an IT project.

20. Assess software quality assurance and configuration management practices, and propose strategies to improve them in an organization.

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