



CBSE Class X Artificial Intelligence Set 4 (104)

Time Allowed :2 Hours	Maximum Marks :50	Total Questions :21
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General Instructions

Read the following instructions very carefully and strictly follow them:

1. This question paper consists of 21 questions in two sections: **Section A & Section B.**
2. Section A has objective type questions whereas Section B contains subjective type questions.
3. Out of the given ($5 + 16 = 21$) questions, a candidate has to answer ($5 + 10 = 15$) questions in the allotted (maximum) time of 2 hours.
4. All questions of a particular section must be attempted in the correct order.
5. **Section A – Objective type questions (24 marks):**
 - (a) This section has 05 questions.
 - (b) Marks allotted are mentioned against each question/part.
 - (c) There is no negative marking.
 - (d) Do as per the instructions given.
6. **Section B – Subjective type questions (26 marks):**
 - (a) This section has 16 questions.
 - (b) A candidate has to do 10 questions.

Section A

1. Answer any 4 out of the given 6 questions:

(4 × 1 = 4 marks)

(i) SMART method can be used to set goals to make you successful in your career and personal life. What does 'A' in SMART stand for?

- (a) Abrupt
- (b) Accountable
- (c) Achievable
- (d) Admirable

Correct Answer: (c) Achievable

Explanation: SMART goals stand for Specific, Measurable, Achievable, Relevant, and Time-bound. The 'A' emphasizes setting realistic and attainable goals, which ensures success by avoiding impractical objectives.

Quick Tip

When setting goals, remember the SMART framework: Achievable goals help you stay realistic and motivated.

(ii) Which of the following is not a key element of self-management skills?

- (a) Prioritising your work
- (b) Not taking feedback
- (c) Goal setting
- (d) Staying updated about new practices

Correct Answer: (b) Not taking feedback

Explanation: Self-management skills involve prioritizing tasks, setting achievable goals, and continuously learning. Avoiding feedback can hinder growth, making it counterproductive to self-management.



Quick Tip

For effective self-management, always seek feedback to improve and adapt to new challenges.

(iii) Which of the following is a quality of successful entrepreneurs?

- (a) Hard working
- (b) Resistance to change
- (c) Lazy
- (d) Less-confident

Correct Answer: (a) Hard working

Explanation: Successful entrepreneurs are diligent and hardworking. They embrace challenges and adapt to changes rather than resisting them. Laziness and lack of confidence hinder entrepreneurial success.

Quick Tip

Successful entrepreneurship requires dedication, adaptability, and persistence in achieving goals.

(iv) The most important software in any computer is the _____. This is the software that starts working as soon as we switch on a computer.

- (a) Web Browser
- (b) Operating System
- (c) Office Software
- (d) Designing Software

Correct Answer: (b) Operating System

Explanation: The Operating System (OS) is the core software that manages hardware and software resources. It ensures the smooth functioning of all applications, including browsers and design tools.



Quick Tip

The operating system is the backbone of your computer. Learn basic OS navigation for efficient computer use.

(v) Which of the following types of communication takes place when one individual addresses a large gathering?

- (a) Written communication
- (b) Public communication
- (c) Small group communication
- (d) Interpersonal communication

Correct Answer: (b) Public communication

Explanation: Public communication occurs when a speaker addresses a large audience, such as in speeches or presentations. It differs from interpersonal or small-group communication, which involve fewer participants.

Quick Tip

Practice public speaking skills to improve your ability to engage and influence large audiences.

(vi) **Assertion (A):** Organic farming technique is an example of a green skill that is essential for sustainable agriculture.

Reason (R): Organic farming techniques prioritize environmental-friendly and sustainable practices such as using natural fertilizers, avoiding synthetic pesticides, and promoting soil health.

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
- (c) (A) is true, but (R) is false.
- (d) (A) is false, but (R) is true.

Correct Answer: (a) Both (A) and (R) are true and (R) is the correct explanation of (A).

Explanation: Organic farming is a green skill as it focuses on sustainable practices, protecting the environment and promoting healthy soil. The reason provided explains why organic farming is essential for sustainable agriculture.

Quick Tip

Understand green skills like organic farming, which play a vital role in achieving environmental sustainability.

2. Answer any 5 out of the given 6 questions:

(5 × 1 = 5 marks)

(i) Which of the following contributes to the efficiency of an AI project?

- (a) High Model Complexity
- (b) Relevant and Authentic Training Data
- (c) Minimal Preprocessing
- (d) Limited Hardware Resources

Correct Answer: (b) Relevant and Authentic Training Data

Explanation: The efficiency of an AI project depends significantly on the quality of training data. Relevant and authentic data ensures accurate predictions and better model performance.

Quick Tip

High-quality data is the backbone of successful AI models. Focus on data cleaning and relevancy for better results.

(ii) This real-life application of NLP is used to provide an overview of a news item or blog post, while avoiding redundancy from multiple sources and maximizing the diversity of content obtained. Which is this application?

- (a) Chatbot



- (b) Virtual Assistant
- (c) Sentiment Analysis
- (d) Automatic Summarization

Correct Answer: (d) Automatic Summarization

Explanation: Automatic Summarization in NLP condenses large text data into a concise form while retaining essential information. It eliminates redundancy and ensures content diversity.

Quick Tip

Explore NLP techniques like extractive and abstractive summarization to handle large datasets efficiently.

(iii) Which of the following represents a machine that is smart but not considered Artificial Intelligence (AI) enabled?

- (a) A robotic vacuum cleaner that can navigate and clean floors autonomously.
- (b) A chatbot that engages in natural language conversations and answers questions.
- (c) A smartphone with facial recognition for unlocking the device.
- (d) A digital alarm clock that rings at a set time every morning.

Correct Answer: (d) A digital alarm clock that rings at a set time every morning

Explanation: While a digital alarm clock is "smart" because it operates automatically, it lacks the decision-making or learning capabilities required for AI.

Quick Tip

Understand the difference between automated systems (rule-based) and AI systems (learning-based) for clarity.

(iv) Which of the following words represents an example of a lemma resulting from lemmatization for "caring" in context to Natural Language Processing (NLP)?



- (a) Care
- (b) Cared
- (c) Cares
- (d) Car

Correct Answer: (a) Care

Explanation: Lemmatization reduces words to their root or base form, known as a lemma. For "caring," the lemma is "care."

Quick Tip

Lemmatization focuses on grammar and meaning, unlike stemming, which works purely on word forms.

(v) Interpersonal Intelligence is a concept that:

- (a) Measures an individual's ability to understand others' emotions and feelings.
- (b) Assesses one's proficiency in mathematics and logical reasoning.
- (c) Describes the level of self-awareness someone has, starting from realizing weaknesses, strengths, to recognizing their own feelings.
- (d) Evaluates an individual's spatial navigation and visualization skills.

Correct Answer: (a) Measures an individual's ability to understand others' emotions and feelings.

Explanation: Interpersonal Intelligence is part of Gardner's Multiple Intelligences theory and emphasizes understanding and interacting effectively with others.

Quick Tip

Improve interpersonal intelligence by practicing active listening and empathy in daily interactions.



(vi) For Data Science, usually the data is collected in the form of tables. These tabular datasets can be stored in different formats. Which of the following formats is not used for storing data in a tabular format?

- (a) CSV
- (b) SQL
- (c) Website
- (d) Spreadsheet

Correct Answer: (c) Website

Explanation: Tabular data is commonly stored in formats like CSV files, SQL databases, or spreadsheets. Websites, however, are not inherently designed for structured tabular storage.

Quick Tip

Tabular data is best stored in structured formats like CSV, SQL, or Excel for easy retrieval and analysis.

3. Answer any 5 out of the given 6 questions:

(5 × 1 = 5 marks)

(i) _____ is one of the parameters for evaluating a model's performance and is defined as the fraction of positive cases that are correctly identified.

- (a) Precision
- (b) Accuracy
- (c) Recall
- (d) F1

Correct Answer: (c) Recall

Explanation: Recall measures the ability of a model to identify all relevant instances. It is calculated as:

$$\text{Recall} = \frac{\text{True Positives}}{\text{True Positives} + \text{False Negatives}}$$

It is particularly important in cases where missing a positive case is critical, such as in medical diagnoses.



Quick Tip

Use recall when it's more important to minimize false negatives (e.g., detecting diseases or fraud).

(ii) In the AI project cycle, which of the following represents the correct order of steps?

- (a) Data Exploration, Problem Scoping, Modelling, Evaluation, Data Acquisition
- (b) Problem Scoping, Data Acquisition, Data Exploration, Modelling, Evaluation
- (c) Modelling, Data Acquisition, Evaluation, Problem Scoping, Data Exploration
- (d) Data Acquisition, Data Exploration, Problem Scoping, Modelling, Evaluation

Correct Answer: (b) Problem Scoping, Data Acquisition, Data Exploration, Modelling, Evaluation

Explanation: The AI project cycle begins with identifying the problem (Problem Scoping), followed by collecting data (Data Acquisition), understanding the data (Data Exploration), building models (Modelling), and finally evaluating the model's performance (Evaluation).

Quick Tip

Follow the AI lifecycle systematically to ensure efficient problem-solving, starting with clear problem scoping.

(iii) _____ is a concept to unify statistics, data analysis, machine learning, and their related methods in order to understand and analyze actual phenomena with data.

- (a) Computer Vision
- (b) Natural Language Processing
- (c) Data Science
- (d) Computer Science

Correct Answer: (c) Data Science

Explanation: Data Science integrates methods from statistics, machine learning, and



domain knowledge to analyze and interpret data. It is widely applied in predictive analytics, decision-making, and automation.

Quick Tip

Data Science combines technical skills and domain expertise. Learn tools like Python, R, and SQL for better proficiency.

(iv) In computer vision, which of the following tasks is used for multiple objects?

- (a) Classification
- (b) Classification + Localization
- (c) Instance Segmentation
- (d) Localization

Correct Answer: (c) Instance Segmentation

Explanation: Instance Segmentation identifies and separates multiple objects in an image at the pixel level, enabling precise object localization and classification.

Quick Tip

Instance segmentation is key in applications like autonomous driving and medical imaging, where object precision is critical.

(v) In email detection, which of the following will be considered as "False Negatives"?

- (a) When a legitimate email is accurately identified as not spam.
- (b) When a spam email is mistakenly identified as legitimate.
- (c) When an email is accurately recognized as spam.
- (d) When an email is inaccurately labeled as important.

Correct Answer: (b) When a spam email is mistakenly identified as legitimate

Explanation: A false negative occurs when a spam email is not flagged as spam and is incorrectly identified as legitimate. This can lead to security issues if malicious content is not detected.



Quick Tip

Minimize false negatives in spam detection to enhance email security and prevent phishing attacks.

(vi) Which of the following applications is not associated with Natural Language Processing (NLP)?

- (a) Sentiment Analysis
- (b) Speech Recognition
- (c) Spam Filtering in emails
- (d) Stock Market Analysis

Correct Answer: (d) Stock Market Analysis

Explanation: NLP is used for tasks like Sentiment Analysis, Speech Recognition, and Spam Filtering as they involve understanding and processing human language. Stock Market Analysis, however, primarily relies on numerical data and time-series analysis.

Quick Tip

Focus on text and language-based tasks to understand the scope of NLP, such as translation, sentiment analysis, or chatbots.

4. Answer any 5 out of the given 6 questions:

(5 × 1 = 5 marks)

- (i) Statement 1: Confusion matrix is an evaluation metric.
Statement 2: Confusion matrix is a record which helps in evaluation.
- (a) Both Statement 1 and Statement 2 are correct.
 - (b) Both Statement 1 and Statement 2 are incorrect.
 - (c) Statement 1 is correct and Statement 2 is incorrect.
 - (d) Statement 2 is correct and Statement 1 is incorrect.

Correct Answer: (a) Both Statement 1 and Statement 2 are correct

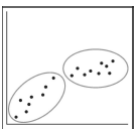


Explanation: A confusion matrix is an evaluation metric that summarizes the performance of a classification model. It records True Positives, False Positives, True Negatives, and False Negatives, helping assess model accuracy and errors.

Quick Tip

Use a confusion matrix to visualize and evaluate the performance of classification models effectively.

(ii) Which form of unsupervised learning does the following diagram indicate?



- (a) Clustering
- (b) Regression
- (c) Reinforcement learning
- (d) Classification

Correct Answer: (a) Clustering

Explanation: Clustering is an unsupervised learning method used to group data points into clusters based on similarity. The diagram shows distinct clusters of data points.

Quick Tip

Clustering is widely used in customer segmentation, pattern recognition, and data exploration.

(iii) Bag of Words is a _____ model which helps in extracting features out of the text which can be helpful in machine learning algorithms.

- (a) Data Science (DS)
- (b) Virtual Reality (VR)
- (c) Natural Language Processing (NLP)
- (d) Computer Vision (CV)

Correct Answer: (c) Natural Language Processing (NLP)

Explanation: Bag of Words (BoW) is an NLP model that represents text data by counting word occurrences in a document. It converts textual information into numerical form for machine learning tasks like text classification.

Quick Tip

Use Bag of Words as a simple yet effective feature extraction technique in text-based machine learning tasks.

(iv) Which of the following represents an example of a recommendation system?

- (a) An online clothing store that offers a wide variety of clothing options.
- (b) A search engine that retrieves relevant web pages based on queries.
- (c) An e-commerce website that displays customer reviews and ratings for products.
- (d) A music streaming platform that suggests songs and playlists based on user listening history.

Correct Answer: (d) A music streaming platform that suggests songs and playlists based on user listening history

Explanation: Recommendation systems use user data and machine learning algorithms to suggest personalized content. Music streaming platforms analyze listening history to recommend songs and playlists.

Quick Tip

Recommendation systems improve user experience by personalizing suggestions using collaborative or content-based filtering.

(v) Name any two search engines.

Correct Answer: Google, Bing

Explanation: Search engines like Google and Bing use algorithms to index and retrieve web pages based on user queries. They rank results to provide relevant information quickly.



Quick Tip

Familiarize yourself with search engines like Google and Bing to enhance online re-search skills.

(vi) What is the primary need for evaluating an AI model's performance in the AI Model Development process?

- (a) To increase the complexity of the model.
- (b) To visualize the data.
- (c) To assess how well the chosen model will work in future.
- (d) To ensure the dataset used in training is robust.

Correct Answer: (c) To assess how well the chosen model will work in future

Explanation: Model evaluation helps determine how accurately the AI model can generalize to unseen data, ensuring its reliability and performance in real-world scenarios.

Quick Tip

Regularly evaluate your AI models using metrics like accuracy, precision, recall, and F1-score for better results.

5. Answer any 5 out of the given 6 questions:

(5 × 1 = 5 marks)

(i) Assertion (A): The term used to refer to the number of pixels in an image is resolution.

Reason (R): Resolution in an image denotes the total number of pixels it contains, usually represented as height × width.

- (a) Both (A) and (R) are true and (R) is the correct explanation for (A).
- (b) Both (A) and (R) are true, but (R) is not the correct explanation for (A).
- (c) (A) is true, but (R) is false.
- (d) (A) is false, but (R) is true.

Correct Answer: (a) Both (A) and (R) are true and (R) is the correct explanation for (A)



Explanation: Image resolution refers to the number of pixels within an image, often expressed as dimensions (e.g., 1920×1080). The reason correctly explains this by linking resolution to pixel count.

Quick Tip

Higher resolution improves image clarity but increases file size. Balance resolution based on your use case.

(ii) When a machine possesses the ability to mimic human traits, i.e., make decisions, predict the future, learn, and improve on its own, it is said to have:

- (a) Computational Skills
- (b) Learning Capability
- (c) Artificial Intelligence (AI)
- (d) Cognitive Processing

Correct Answer: (c) Artificial Intelligence (AI)

Explanation: Artificial Intelligence refers to a machine's ability to simulate human intelligence by learning from data, reasoning, and adapting to new inputs to make decisions autonomously.

Quick Tip

AI applications include natural language processing, computer vision, robotics, and predictive analytics.

(iii) Statement 1: To evaluate a model's performance, we need either precision or recall.

Statement 2: When the value of both Precision and Recall is 1, the F1 score is 0.

- (a) Both Statement 1 and Statement 2 are correct.
- (b) Both Statement 1 and Statement 2 are incorrect.
- (c) Statement 1 is correct, but Statement 2 is incorrect.
- (d) Statement 1 is incorrect, but Statement 2 is correct.

Correct Answer: (c) Statement 1 is correct, but Statement 2 is incorrect

Explanation: Precision and recall are crucial metrics for evaluating a model's performance. The F1 score is 1 when precision and recall both are 1, not 0 as stated in Statement 2.

Quick Tip

Use precision for low false positives and recall for low false negatives. F1 score balances both metrics.

(iv) The concept of _____ is used to apply face filters on various social media platforms.

- (a) NLP
- (b) Computer Vision
- (c) Data Science
- (d) Blockchain Technology

Correct Answer: (b) Computer Vision

Explanation: Computer vision uses image recognition and analysis techniques to detect and modify facial features, enabling face filters and augmented reality effects on social media platforms.

Quick Tip

Explore computer vision libraries like OpenCV and Mediapipe for face detection and filter applications.

(v) The 4 W's Problem Canvas helps in identifying the key elements related to the given problem. Which of the following is NOT one of the blocks of the Problem Canvas?

- (a) When
- (b) Where
- (c) What
- (d) Why

Correct Answer: (a) When

Explanation: The Problem Canvas uses the elements “What,” “Where,” and “Why” to understand and frame the problem, while “When” is not part of the core components.

Quick Tip

Focus on the “3 W’s” (What, Where, Why) to analyze problems effectively in project planning.

(vi) Which domain of AI is used for interacting with virtual assistants such as Siri and Alexa?

- (a) Machine Learning (ML)
- (b) Computer Vision (CV)
- (c) Natural Language Processing (NLP)
- (d) Technical Vision (TV)

Correct Answer: (c) Natural Language Processing (NLP)

Explanation: NLP enables virtual assistants like Siri and Alexa to understand and respond to user queries in natural language, making interactions seamless and intuitive.

Quick Tip

Enhance your knowledge of NLP tools like NLTK and Hugging Face for developing conversational AI systems.

Section B

6. Give any two examples of how individual choices and behaviours can contribute in achieving sustainable development.

Answer: 1. Reducing single-use plastic and opting for reusable alternatives to minimize waste.

2. Conserving water and energy through mindful usage at home and work.

Quick Tip

Sustainable habits start with small, consistent changes like reusing materials and saving energy.

7. List any two common misconceptions about entrepreneurship.

Answer: 1. Entrepreneurs need significant capital to start a business.
2. Entrepreneurship is only about making profits, not solving real-world problems.

Quick Tip

Entrepreneurship is about solving problems creatively, not just about profits or large investments.

8. What is the importance of time management in effectively dealing with stress?

Provide any one strategy for improving time management skills to reduce stress.

Answer: Time management reduces stress by prioritizing tasks and preventing last-minute pressure. Strategy: Use a daily planner to schedule and organize tasks effectively.

Quick Tip

Effective time management reduces stress and increases productivity. Plan and prioritize your day.

9. Mention any two measures that individuals or organisations can take to protect their data from theft and viruses.

Answer: 1. Use strong, unique passwords and enable two-factor authentication.
2. Regularly update antivirus software and security patches.

Quick Tip

Cybersecurity starts with strong passwords and updated antivirus tools.



10. The method of communication that you choose could affect the relationship with your peers, superiors, and customers. Write the four factors on the basis of which you can choose the right method of communication.

Answer: 1. Urgency of the message.
2. Complexity of the content.
3. Preferences of the audience.
4. Availability of communication tools.

Quick Tip

Choose communication methods based on audience preferences, urgency, and content complexity.

11. Differentiate between Machine Learning (ML) and Deep Learning (DL).

Answer: Machine Learning involves algorithms to make predictions based on data, while Deep Learning is a subset of ML using neural networks to mimic human decision-making.

Quick Tip

Deep Learning requires larger datasets and computational power compared to Machine Learning.

12. What are the primary differences between Script-bots and Smart-bots?

Answer: Script-bots follow pre-programmed instructions, while Smart-bots use AI to adapt and respond intelligently to user inputs.

Quick Tip

Smart-bots are more flexible and intelligent than Script-bots, making them better for complex tasks.

13. What do you mean by Evaluation of an AI model? Also, explain the concept of overfitting with respect to AI model Evaluation.

Answer: Model evaluation measures an AI model's accuracy, precision, and performance. Overfitting occurs when a model performs well on training data but poorly on unseen data, indicating lack of generalization.

Quick Tip

Prevent overfitting by using techniques like cross-validation and regularization during model training.

14. For a healthcare organisation's objective of predicting disease outbreaks and efficiently allocating resources through the analysis of medical records, would you recommend using supervised learning or unsupervised learning as the preferred machine learning approach? Explain your choice briefly.

Answer: Supervised learning is recommended as it uses labeled data, enabling the model to learn patterns and predict disease outbreaks effectively. Medical records often contain structured, labeled data such as patient history and diagnosis, suitable for supervised learning.

Quick Tip

Use supervised learning for tasks requiring labeled data like predictions and classifications.

15. What role does data play in AI-based applications? Name any two sources of online data collection for building any AI-based application.

Answer: Data is the foundation of AI, enabling models to learn patterns, make decisions, and improve over time. Sources: 1. Open datasets from Kaggle. 2. Public APIs like Twitter or Google Maps for real-time data.



Quick Tip

High-quality, diverse data improves AI model performance. Explore platforms like Kaggle or UCI Machine Learning Repository.

16. Differentiate between grayscale and RGB images.

Answer: Grayscale images contain shades of gray, ranging from black to white, represented by a single channel. RGB images use three channels (Red, Green, Blue) to represent colors, offering more visual information.

Quick Tip

Grayscale images are efficient for tasks like edge detection, while RGB is ideal for tasks needing full-color details.

17. What are Neural networks? Briefly explain all the layers of a neural network.

Answer: Neural networks are computational models inspired by the human brain, designed to process data and recognize patterns. Layers:

1. **Input Layer:** Accepts raw data features.
2. **Hidden Layers:** Perform computations through neurons using activation functions.
3. **Output Layer:** Produces the final prediction or classification.

Quick Tip

Neural networks learn from data by adjusting weights in hidden layers during training.

18. Give any four examples of applications of AI that we see around us.

- Answer:**
1. Virtual assistants like Siri and Alexa.
 2. Self-driving cars using computer vision.
 3. Fraud detection in banking systems.
 4. Personalized recommendations on e-commerce platforms.



Quick Tip

AI applications span various fields, including healthcare, finance, and transportation.

19. Consider the following two documents:

Document 1: ML and DL are part of AI.

Document 2: DL is a subset of ML.

Implement all four steps of the Bag of Words (BoW) model to create a document vector table. Depict the outcome of each step.

Answer: Steps of the Bag of Words model:

1. **Text Preprocessing:** Tokenize words from both documents.

Document 1: [ML, DL, part, AI]

Document 2: [DL, subset, ML]

2. **Vocabulary Creation:** [ML, DL, part, AI, subset].

3. **Word Count:** Count word occurrences in each document.

4. **Vector Table:**

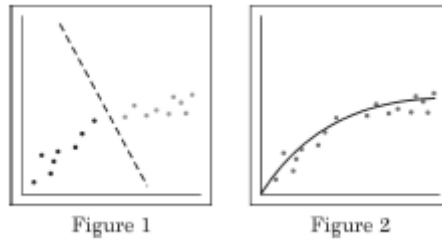
Word	ML	DL	part	AI	subset
Document 1	1	1	1	1	0
Document 2	1	1	0	0	1

Quick Tip

Bag of Words is a simple text representation method; combine it with TF-IDF for better results.

20. Consider the following graphs (Figure 1 and Figure 2) that demonstrate the two types of Supervised Learning Models of Artificial Intelligence. Identify and explain each model giving suitable examples of each.





Answer: Figure 1: Linear model for regression. It predicts continuous values by finding the best-fit straight line (e.g., predicting house prices).

Figure 2: Non-linear model for classification. It uses a curved boundary to separate classes (e.g., categorizing emails as spam or not).

Quick Tip

Choose linear models for simpler patterns and non-linear models for complex data relationships.

21. A binary classification model has been developed to classify news articles as either "Fake News" or "Real News". The model was tested on a dataset of 500 news articles, and the resulting confusion matrix is as follows:

Confusion Matrix	Reality Yes	Reality No
Predicted Yes	45	15
Predicted No	20	420

(A) How many total cases are True Negative in the above scenario?

(B) Calculate Precision, Recall, and F1-Score.

Answer:

1. **True Negative (TN):** From the confusion matrix, the total True Negative cases are 420.

2. **Precision:**

$$\text{Precision} = \frac{\text{True Positive (TP)}}{\text{True Positive (TP)} + \text{False Positive (FP)}} = \frac{45}{45 + 15} = \frac{45}{60} = 0.75$$

3. Recall:

$$\text{Recall} = \frac{\text{True Positive (TP)}}{\text{True Positive (TP)} + \text{False Negative (FN)}} = \frac{45}{45 + 20} = \frac{45}{65} \approx 0.6923$$

4. F1-Score:

$$\text{F1-Score} = 2 \times \frac{\text{Precision} \times \text{Recall}}{\text{Precision} + \text{Recall}} = 2 \times \frac{0.75 \times 0.6923}{0.75 + 0.6923} \approx 2 \times \frac{0.5192}{1.4423} \approx 0.7198$$

Quick Tip

The confusion matrix helps calculate key performance metrics like Precision, Recall, and F1-Score. Precision is useful for minimizing false positives, while Recall is essential for minimizing false negatives.