

**PRACTICE PAPER-5**  
**CLASS X**  
**ARTIFICIAL INTELLIGENCE (CODE 417)**  
**(SOLUTIONS)**

1. (i) Goal Setting  
(ii) (c) Non-Verbal Communication  
(iii) (a) Both A and R are true and R is the correct explanation of A.  
(iv) (d) Hierarchical  
(v) (c) Biomass Energy  
(vi) (b) Chetna Gala Sinha
2. (i) (b) Both A and R are true but R is not the correct explanation of A.  
(ii) (d) Personal blogs  
(iii) (c) Statement 1 is correct but Statement 2 is incorrect.  
(iv) True Positive  
(v) Stemming, Lemmatization  
(vi) (b) Facial recognition for unlocking a device
3. (i) 0.8  
(ii) (a) True Positive  
(iii) (b) Making decisions without an input from a user  
(iv) Visual  
(v) (b) A collection of texts used for linguistic analysis and training language models  
(vi) (b) ChatGPT's responses
4. (i) Neural Networks  
(ii) (a) Both Statement 1 and Statement 2 are correct.  
(iii) (c) The model will never require retraining after deployment.  
(iv) (b) False Positive  
(v) (a) Precision = (True Positive / All Predicted Positives)  
(vi) Overfitting
5. (i) (c) Machine Learning (ii) (c) F1 Score  
(iii) (c) Email Spam Filtering (iv) (a) White  
(v) (c) The ability to learn from experience  
(vi) (c) High accuracy on training data and low accuracy on new data
6. Entrepreneurs develop critical thinking, problem-solving, decision-making, communication, negotiation, leadership and risk management skills. They develop critical thinking by solving problems and interpersonal skills by networking and leading teams effectively.
7. Insufficient disk space slows down systems, increases boot time and impacts software performance. Regular cleanup, file compression and cloud storage are effective management strategies.
8. Verbal communication is better for immediate feedback and building bonds while written communication ensures clarity and documentation. Choosing the right medium depends on the message's urgency, importance and the desired level of formality.
9. Cochin Airport's solar power initiatives, rainwater harvesting and waste management practices serve as models for other institutions to achieve energy efficiency and environmental conservation.

10. Emotional symptoms of stress include anxiety, irritability, mood swings and difficulty concentrating. Recognizing these early allows for proactive coping mechanisms like relaxation techniques, exercise and seeking support.
11. Organizations can balance data needs with privacy by using anonymization, encryption and secure data storage. They should also follow ethical guidelines and obtain informed consent to protect individual privacy while training AI.
12. Sanya should utilize Natural Language Processing (NLP). NLP techniques like text summarization and sentence compression are crucial for condensing long articles while simultaneously preserving key information.
13. Firstly, Arjun should use train-test-split method and divide the data into training and testing sets. Secondly, he should evaluate model performance using metrics like accuracy and F1 score.
14. Words like 'support' and 'issues' are crucial for sentiment analysis. These words directly relate to customer sentiment and are crucial for accurately determining whether the sentiment is positive or negative.
15. Rule-based AI involves defining explicit rules in structured format, applying logic to make decisions and refining for specific scenarios to achieve desired results.

16.		Predicted Positive	Predicted Negative
	Actual Positive	350	50
	Actual Negative	30	150

17. Predictive text is a feature that uses AI to anticipate the next word you are likely to type. It analyzes your past messages, vocabulary and even the current sentence to predict and suggest the most probable word. This is achieved through machine learning algorithms that learn from your typing patterns and adapt to your individual writing style over time.
18. Identifying reliable data sources and ensuring their quality are crucial for Arjun’s weather forecasting project. Data sources like satellites and historical weather records provide valuable information. Ensuring data accuracy, completeness and consistency is vital for training an accurate AI model. Inaccurate data can lead to unreliable forecasts and potentially dangerous predictions.
19. (a) Sentiment Analysis is demonstrated in the given image. It identifies emotions (positive, negative or neutral) in text.  
 (b) Sentiment analysis is crucial for analyzing customer reviews. By examining the sentiment expressed in reviews, businesses can gauge overall customer satisfaction, identify areas for improvement, monitor brand reputation, enhance customer service and pinpoint product strengths and weaknesses. This valuable data allows businesses to make data-driven decisions to improve products, services and overall customer experience.
20. Data Exploration is a critical initial step in any data analysis project. It involves a comprehensive examination of the dataset, including data cleaning to handle missing values and errors, data visualization to identify patterns and outliers and calculating summary statistics to understand data characteristics. This exploratory phase is essential for making informed decisions about data preparation, feature selection and the choice of appropriate analysis techniques, ultimately leading to more accurate and meaningful insights.
21. (i) **False Negative:** 20  
 (ii) **Precision:**  $40 / (40 + 10) = 0.8$   
**Recall:**  $40 / (40 + 20) = 0.67$   
**F1 Score:**  $2 * (0.8 * 0.67) / (0.8 + 0.67) = 0.73$