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

Tim	e: 2 Hours Maximum Marks: 50		
Ge	General Instructions:		
1.	Please read the instructions carefully. SUITAN Change		
2.	. This Question Paper consists of 21 questions in two sections: Section A & Section B.		
3.	Section A has Objective type questions whereas Section B contains Subjective type questions.		
4.	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.		
5.	All questions of a particular section must be attempted in the correct order.		
6.	SECTION A – OBJECTIVE TYPE QUESTIONS (24 MARKS):		
	(a) This section has 5 questions.		
	(b) Marks allotted are mentioned against each question/part.		
	(c) There is no negative marking.		
	(d) Do as per the instructions given.		
7.	SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):		
	(a) This section has 16 questions.		
	(b) A candidate has to do 10 questions.		
	(c) Do as per the instructions given.		
	(d) Marks allotted are mentioned against each question/part.		

SECTION A – OBJECTIVE TYPE QUESTIONS

1. Answer any 4 out of the given 6 questions on Employability Skills.

(i) "Neha visualized her long-term goals, broke them into smaller milestones and consistently worked towards achieving them, step by step." Which self-management skill is clearly visible in the given statement?

(ii) Which of the following types of communication involves using facial expressions, gestures and body language to convey messages?

(a) Oral Communication

- (b) Verbal Communication
- (c) Non-Verbal communication (d) Visual Communication
- (iii) Assertion (A): Internal barriers can prevent individuals from expressing themselves clearly during communication.

Reasoning (R): Internal barriers such as fear, anxiety and lack of confidence affect a person's ability to communicate effectively.

- (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.
- (iv) What is the characteristic structure of a directory?
 - (a) Flat
 - (c) Circular (d) Hierarchical
- (v) Which of the following is a renewable source of energy?

(a) Coal **Coal** (b) Natural Gas (c) Biomass Energy **C** (d) Nuclear Energy

(vi) Who founded the bank that empowers women to start and manage their businesses?

(b) Networked

- (a) Kiran Mazumdar-Shaw
 - (c) Chetan Maini

- (b) Chetna Gala Sinha
- (d) Arunachalam Meganathan

(1 × 4 = 4 marks)

- 2. Answer any 5 out of the given 6 questions.
 - (i) Assertion (A): The first step in decision-making process is identifying the problem.
 Reasoning (R): Evaluating decisions helps in determining the best solution.
 - (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. 卢 🕻
 - (c) A is true but R is false.
 - (d) A is false but R is true.

(c) Sensor Readings

- (ii) Which of the following may be an unauthentic source of data?
 - (a) Census

(b) Government websites(d) Personal blogs

sultan chand

- (iii) **Statement 1:** In a True Negative scenario, both the predicted value and the actual value are False. **Statement 2:** In a False Negative scenario, the predicted value is True and the actual value is False.
 - (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 2 is correct but Statement 1 is incorrect.
- (iv) Identify whether the given situation depicts True Positive, False Positive, True Negative or False Negative.



ACTUAL: Labelled as Thief

- (v) State whether the following statement is True or False: Stemmed and Lemmatized words are identical in Natural Language Processing (NLP).
- (vi) Computer vision is used in smartphones for:
 - (a) Advanced gaming experiences
 - (c) Optimizing battery performance
- 3. Answer any 5 out of the given 6 questions.
 - (i) State True or False:
 - Recall = TP/(TP + FN)
 - (ii) If a defective product is identified as defective during quality check, it is known as
 (a) True Positive
 (b) False Positive
 (c) False Negative
 (d) True Negative
 - (iii) Autonomy of a system refers to:
 - (a) The capability of a system to follow predefined instructions
 - (b) Making decisions without an input from a user
 - (c) The speed of processing the input
 - (d) The complexity of the system's hardware
 - (iv) Computer vision is a field of artificial intelligence that enables computers to interpret and understand _______ information from the visual world.
 - (v) What is a corpus?
 - (a) A small set of words used for language modelling
 - (b) A collection of texts used for linguistic analysis and training language models
 - (c) A method for removing stopwords from a text
 - (d) A technique to convert words to their root form



- (b) Facial recognition for unlocking a device
- (d) Social media sharing

(1 × 5 = 5 marks)

Decoding Artificial Intelligence–X





PREDICTED: Labelled as Thief

- (vi) Which of the following is not a reliable source of data?
 - (a) Weather sensors

(c) Government websites

- (b) ChatGPT's response
- (d) None of these

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

- (i) Ramesh came across an AI model that uses layers of interconnected nodes to mimic the way the human brain works for tasks like image recognition and language processing. What is the name of this approach?
- (ii) Statement 1: In RGB colour model, a pixel with values of 0 for each of red, green and blue represents black.

Statement 2: In RGB color model, a pixel with values of 255 for each of red, green and blue represents white.

- (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 2 is correct but Statement 1 is incorrect.
- (iii) An AI system is deployed to detect fraud in financial transactions. Which statement is incorrect about this system?
 - (a) The dataset containing information on past fraudulent and non-fraudulent transactions is training data.
 - (b) The algorithm used might include decision trees or neural networks.
 - (c) The model will never require retraining after deployment.
 - (d) Validation data is used to tune hyperparameters during model development.
- (iv) If an email is not spam and is incorrectly marked as spam, it is known as (b) False/Positive (a) True Positive (c) False Negative (d) True Negative
- (v) What is the formula for Precision?
 - (a) Precision = (True Positive / All Predicted Positives)
 - (b) Precision = (True Positive / All Actual Positives)
 - (c) Precision = (True Negative / All Predicted Negatives)
 - (d) Precision = (True Negative / All Actual Negatives)
- (vi) Amit created a recommendation system for movies. Initially, the model performed well on the training data, but over time, as user preferences changed, the system's predictions became less accurate. What is this phenomenon called?

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

- (i) Neha built a recommendation system that suggests books based on the user's reading history and preferences. Which domain of AI is being utilized here?
 - (a) Natural Language Processing (b) Expert Systems
 - (c) Machine Learning (d) None of these
- (ii) Which evaluation metric balances Precision and Recall for imbalanced datasets?
 - (a) Accuracy
 - (c) F1 Score
- (iii) Which of the following is an application of NLP?
 - (a) Scene Understanding
 - (c) Email Spam Filtering
- (iv) Which color is represented by the highest values of RGB pixel?
 - (a) White
 - (c) Blue

- (b) Sensitivity
- (d) Specificity
- (b) Medical Imaging
- (d) Gesture Recognition

:hand

- (b) Black
- (d) Yellow





$(1 \times 5 = 5 \text{ marks})$



- (v) Adaptivity of a system refers to:
 - (a) The ability to quickly respond to external situations
 - (b) The capacity to handle the changes around it
 - (c) The ability to learn from experience
 - (d) The efficiency of its hardware components
- (vi) What are the characteristics of overfitting?
 - (a) Low accuracy on training data and low accuracy on new data
 - (b) Low accuracy on training data and high accuracy on new data
 - (c) High accuracy on training data and low accuracy on new data
 - (d) High accuracy on training data and high accuracy on new data

SECTION B – SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills in 20-30 words each. (2 × 3 = 6 marks)

- **6.** What critical thinking and interpersonal skills can an individual develop throughout their entrepreneurial journey?
- **7.** How does managing disk space relate to overall system performance and security? Can you suggest strategies for effective disk space management?
- **8.** How does the choice between verbal and written communication affect the impact of a message in different scenarios? Provide examples.
- **9.** What sustainable practices at Cochin International Airport can serve as models for other institutions to achieve energy efficiency and environmental conservation?
- **10.** What are the emotional symptoms of stress and how can recognizing them early help in developing coping mechanisms?

Answer any 4 out of the given 6 questions in 20–30 words each.

- **11.** All often relies on large datasets, raising concerns about privacy. How can organizations balance the need for data to train Al systems with the ethical responsibility to protect individual privacy?
- **12.** Sanya wants to build a model that can automatically summarize long articles into short, meaningful paragraphs. Which domain should she use and why?
- **13.** Arjun has built an AI model for classifying images. What two steps should he take to evaluate whether the model is performing well on unseen data?
- **14.** Analyze the phrase, 'Contact support if you have issues with your order' and identify any words that should be retained during preprocessing for sentiment analysis. Explain your reasoning.
- 15. Explain the different steps involved in rule-based approach of AI.
- **16.** Draw the confusion matrix for the following data
 - the number of true positives = 350
 - the number of true negatives = 150
 - the number of false positives = 30
 - the number of false negatives = 50

Answer any 3 out of the given 5 questions in 50–80 words each.

- 17. Your teacher is fascinated by how your phone suggests the next word when you're typing a message. Explain to them what predictive text is and how AI uses past data to make these predictions.
- **18.** Arjun is collecting data for a weather forecasting AI project. Explain to him the importance of identifying data sources and ensuring data quality during the data acquisition phase.



(2 × 4 = 8 marks)

(4 × 3 = 12 marks)



- 19. The texts below have been analyzed by a computer to determine their meaning and marked as Positive, Negative or Neutral.
 - (a) What is the NLP task being performed?
 - (b) How can this task be used in analyzing customer reviews?



- 20. Write a short note on Data Exploration.
- 21. A weather prediction system predicts rainfall and outputs the following Confusion Matrix:

	Reality (Rain)	Reality (Not Rain)
Prediction (Rain)	40	10
Prediction (No Rain)	20	30

- (i) Determine the value of False Negative.
- (ii) Calculate Precision, Recall and F1 Score for predicting rainfall.







