PRACTICE PAPER–1
CLASS X
ARTIFICIAL INTELLIGENCE (CODE 417)

Time: 2 Hours **Maximum Marks: 50**

General Instructions:

1. Please read the instructions carefully.
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. **(1 × 4 = 4 marks)**

(i) "Riya sets clear priorities every morning, schedules her tasks effectively and ensures she meets all deadlines while maintaining a good work-life balance." Which self-management skill is clearly visible in the given statement?

(ii) Who is typically considered an entrepreneur?
   (a) An individual who works exclusively for an established organization
   (b) Someone who invests in stocks and bonds for passive income
   (c) A person who starts and operates a new business venture
   (d) A professional who specializes in corporate management

(iii) **Assertion (A):** Entrepreneurship fosters innovation and drives economic growth.
Reasoning (R): Entrepreneurs create new products and services that address societal needs and generate employment opportunities.
   (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 a crucial skill for addressing environmental challenges and building a sustainable future?
   (a) Financial Literacy (b) Green Skills
   (c) Social Media Management (d) None of these

(v) Which of the following is used for giving commands or instructions?
   (a) Assertive Sentences (b) Interrogative Sentences
   (c) Imperative Sentences (d) Exclamatory Sentences

(vi) Which of the following is the shortcut key combination to open File Explorer?
   (a) Ctrl + E (b) Ctrl + W
   (c) Windows + E (d) Windows + W

2. Answer any 5 out of the given 6 questions. **(1 × 5 = 5 marks)**

(i) **Assertion (A):** Supervised learning in AI uses labelled data for training.
Reasoning (R): Unsupervised learning requires unlabelled data and identifies patterns within it.
(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.

(ii) In a medical test if the disease is correctly diagnosed as positive, it is known as _____.
(a) True Positive
(b) False Positive
(c) False Negative
(d) True Negative

(iii) Regression algorithm is used to:
(a) Predict categorical labels
(b) Classify data into multiple groups
(c) Predict continuous numerical values
(d) Cluster similar data points

(iv) Which application of Computer Vision does this image represent?

(v) Time taken to complete a task falls under which type of data?
(a) Continuous
(b) Discrete
(c) Ordinal
(d) Nominal

(vi) In a corpus of 10,000 words, the word "and" appears 1,500 times across all documents. How would you categorize the word "and"?
(a) Rare word
(b) Frequent word
(c) Removable word
(d) Stopword

3. Answer any 5 out of the given 6 questions. **(1 × 5 = 5 marks)**

(i) In the context of learning in ANNs, what does backpropagation do?
(a) It updates weights through the network's layers.
(b) It forwards the input data through the network.
(c) It reduces the computational complexity of the network.
(d) It permanently stores the inputs for future reference.

(ii) Which of the following is an application of NLP?
(a) DNA Sequencing
(b) Face Detection
(c) Named Entity Recognition
(d) Traffic Prediction

(iii) _____ data doesn't have a structure but has some organization.

(iv) Dimensionality Reduction is a part of _____.
(a) Data Acquisition
(b) Data Exploration and Preprocessing
(c) Modelling
(d) Evaluation

(v) Meera developed a system that identifies objects in images, such as cars, trees and pedestrians, to assist in autonomous driving. Identify the domain of AI in the given scenario.

(vi) What is the purpose of validation dataset?

(a) Provides additional training models to the model

(b) Evaluates the model's performance on unseen data

(c) Introduces noise during the training process

(d) Increases the complexity of the model

4. Answer any 5 out of the given 6 questions. **(1 × 5 = 5 marks)**

(i) Which of the following best describes a perceptron?

(a) A type of clustering algorithm

(b) A basic unit of Artificial Neural Network (ANN)

(c) A tool for text processing in NLP

(d) A data preprocessing method

(ii) **Statement 1:** AQI sensors are considered an authentic source of data.

Statement 2: AQI sensors provide reliable and real-time measurements for air quality, making them an authentic data source.

(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) Kritika is building an AI model to classify images of fruits. She preprocesses her data by resizing images, normalizing pixel values and removing duplicates. Which statement is incorrect?

(a) Normalization helps scale the pixel values to a standard range.

(b) Removing duplicate images improves the model's performance.

(c) Preprocessing is done after the training stage of the AI life cycle.

(d) Resizing ensures images have uniform dimensions for training.

(iv) Which of these involves step-by-step instructions for solving a particular problem?

(a) Machine Learning Algorithm (b) Artificial Neural Network

(c) Quantum Computing (d) Traditional Learning Algorithm

(v) What is the measure of the number of pixels that make up an image?

(a) Pixel Density (b) Resolution

(c) Color Depth (d) Aspect Ratio

(vi) Raj trained a machine learning model that performs exceptionally well on the training dataset but poorly on new, unseen data. What is this concept called?

5. Answer any 5 out of the given 6 questions. **(1 × 5 = 5 marks)**

(i) Ravi created a voice assistant that recognizes spoken commands to play songs, set reminders and answer general queries. Identify the domain of AI in the given scenario.

(a) Computer Vision (b) Natural Language Processing

(c) Robotics (d) Data Science

(ii) Which of the following is not a principle of bioethics?

(a) Autonomy (b) Justice

(c) Accountability (d) Beneficence

(iii) Which of the following libraries is widely used for Natural Language Processing?

(a) PyTorch (b) NumPy

(c) Pandas (d) NLTK

(iv) To address underfitting, we can _____ to improve model performance.

(a) Increase model complexity (b) Decrease number of features

(c) Decrease number of epochs (d) Use regularization

(v) Which of the following dimensions must be reduced while choosing a tenant?

(a) Rental history (b) Ability to pay rent on time

(c) Time of birth (d) Financial stability

(vi) Which of the following is an example of structured data?

(a) Images (b) JSON files (c) Tables (d) None of these

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. How might stress manifest in individuals and what underlying factors contribute to these symptoms?

7. In what ways does a green economy benefit both the environment and economic growth and why is it essential for future sustainability?

8. What challenges might arise when attempting to maintain conciseness in communication and how can these barriers be overcome?

9. How do ecopreneurs combine environmental responsibility with business innovation and what role do they play in shaping a sustainable future?

10. What proactive steps can individuals take to safeguard their computers from viruses and how do these practices contribute to overall cybersecurity?

Answer any 4 out of the given 6 questions in 20–30 words each. (2 × 4 = 8 marks)

11. Human intelligence encompasses reasoning, problem-solving and creativity. How do these components compare to the capabilities of artificial intelligence?

12. Ravi is working on a model to predict house prices based on factors like location, size and age of the property. What type of learning model should he use and why?

13. Karan is collecting data for his AI model. What two factors should he consider to ensure that the data is relevant and of high quality?

14. What do you understand by resolution of an image?

15. In the sentence, 'AI can improve productivity and efficiency in businesses', identify any two stop words that should not be removed and explain why they are important for the sentence's context.

16. Draw the confusion matrix for the following data

- the number of true positives = 120
- the number of true negatives = 80
- the number of false positives = 40
- the number of false negatives = 60

Answer any 3 out of the given 5 questions in 50–80 words each. (4 × 3 = 12 marks)

17. Your friend is curious about machine learning but doesn't understand the term. How would you define machine learning and explain it with a real-world example?

18. Aditya is collecting data for his AI project. Guide him on the steps to identify reliable data sources and explain the importance of ensuring data relevance and quality.

19. Identify the type of segmentation in the given images. Explain the difference between Instance Segmentation and Semantic Segmentation.

(A) (B)

20. Human languages are full of ambiguities, like words with multiple meanings and varying sentence structures. What challenges might arise when teaching computers to interpret such ambiguities and how can NLP address them?

21. An AI system predicts loan approvals and the Confusion Matrix for its performance is as follows:

	Reality (Yes)	Reality (No)
Prediction (Yes)	60	30
Prediction (No)	20	40

(i) Identify the value for True Positive and False Positive.

(ii) Calculate Precision, Recall and F1 Score.