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First Pre-Board Examination 2025-26
Class X
Artificial Intelligence(Subject Code-417)

Max. Time : 2 Hours **Max.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):**
   - i. This section has 05 questions.
   - ii. Marks allotted are mentioned against each question/part.
   - iii. There is no negative marking.
   - iv. Do as per the instructions given.
7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):**
   - i. This section has 16 questions.
   - ii. A candidate has to do 10 questions.
   - iii. Do as per the instructions given.
   - iv. Marks allotted are mentioned against each question/part.

Q1	Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)	
i	What is the term used for a collection of words and phrases used in a language? a) Grammar b) Lexicon c) Syntax d) Vocabulary	1
ii	Which of the following is an example of effective time management? a) Procrastinating until the deadline b) Setting priorities and creating a schedule c) Multitasking without focus d) Working without breaks	1
iii	What does the term "protocol" refer to in computer networking? a) A type of hardware device b) A set of rules for data communication c) A software application d) A storage device	1
iv	Rahul started a small online business selling handmade crafts. Initially, he worked from home and managed everything himself. After two years, his business grew, and he hired five employees and opened a small workshop. Now he plans to expand to other cities. Which entrepreneurial stage is Rahul currently in? a) Enter b) Survive c) Grow d) Retire	1
v	Which of the following actions contributes to reducing carbon footprint? a) Using plastic bags regularly b) Keeping lights on when not needed c) Using public transportation d) Wasting water	1
vi	Active listening involves: a) Interrupting the speaker frequently b) Paying full attention and responding appropriately c) Thinking about your response while the other person is speaking	1

	d) d) Looking at your phone while someone is talking	
Q2.	**Answer any 5 out of the given 6 questions (1 × 5 = 5 marks)**	
i	Which stage of the AI Project Cycle involves collecting information from reliable and authentic sources? a) Problem Scoping b) Data Acquisition c) Data Exploration d) Modeling	1
ii	Assertion (A): Statistical Data is a domain of AI that collects and analyzes numerical data to derive meaningful insights. Reason (R): The information extracted through statistical data can be used to make informed decisions. a) Both A and R are correct, and R is the correct explanation of A b) Both A and R are correct, but R is not the correct explanation of A c) A is correct, but R is incorrect d) A is incorrect, but R is correct	1
iii	A medical diagnosis system uses an AI algorithm that was trained only on data from patients in urban hospitals. When deployed in rural areas, it gives inaccurate diagnoses for conditions common in rural populations. What is the most likely reason for this issue? a) The algorithm was not trained properly b) The training data lacked diversity and representation from rural populations c) The rural patients provided incorrect information d) The algorithm is too complex	1
iv	_____ is the stage in the AI Project Cycle where you set goals and define the problem you want to solve. a) Data Acquisition b) Problem Scoping c) Data Exploration d) Modeling	1
v	Which ethical framework focuses specifically on healthcare and life sciences? a) Rights-based framework b) Bioethics c) Utility-based framework d) Virtue-based framework	1
vi	State True or False: Computer Vision is a superset of Image Processing, while Image Processing is a subset of Computer Vision	1
Q3	**Answer any 5 out of the given 6 questions (1 × 5 = 5 marks)**	
i	An AI-powered agricultural monitoring system fails to detect pest infestations in crops, resulting in crop damage. Which AI domain should be enhanced to improve this system? a) Natural Language Processing b) Statistical Data c) Computer Vision d) Recommendation Systems	1

ii	In a dataset of students, which of the following represents a feature? a) The entire dataset b) A column like "Age" or "Grade" c) A single student's record d) The number of rows in the dataset	1
iii	In a disease detection system, out of 500 people tested, 100 actually have the disease. The system correctly identifies 80 people as having the disease but also incorrectly identifies 40 healthy people as having the disease. What is the precision of the system? a) 0.67 b) 0.80 c) 0.75 d) 0.50	1
iv	Assertion (A): In supervised learning, the model is trained using labeled data where both input features and corresponding output labels are provided. Reason (R): Supervised learning helps the model learn patterns from examples and then predict outputs for new, unseen data. a) Both A and R are correct, and R is the correct explanation of A b) Both A and R are correct, but R is not the correct explanation of A c) A is correct, but R is incorrect d) A is incorrect, but R is correct	1
v	Identify the Computer Vision application shown: An app that recognizes text from images and converts it into editable text. a) Facial Recognition b) Object Detection c) Optical Character Recognition (OCR) d) Face Filters	1
vi	Count and write the number of tokens in the sentence: "Machine learning enables computers to learn from data and improve their performance over time."	1
Q4	**Answer any 5 out of the given 6 questions (1 × 5 = 5 marks)**	
i	What is the primary purpose of ethical frameworks in AI development? a) To increase profit margins b) To ensure that AI makes morally acceptable choices c) To reduce development time d) To simplify coding	1
ii	Statement 1: In supervised learning, the model is trained on labeled data where both input and output are known. Statement 2: In unsupervised learning, the model discovers patterns and relationships in unlabeled data on its own. Which of the following is correct? a) Both Statement 1 and Statement 2 are correct. b) Both Statement 1 and Statement 2 are incorrect. c) Only Statement 1 is correct. d) Only Statement 2 is correct.	1
iii	A company is using an AI model to evaluate job candidates based on four attributes. Each attribute has a weight: Previous Experience: weight = 0.4, value = 1 Education Level: weight = 0.3, value = 1 Technical Skills: weight = 0.2, value = 0 Communication Skills: weight = 0.1, value = 1 A bias value of 0.2 is added.	1

	The formula used is: $y = w_1x_1 + w_2x_2 + w_3x_3 + w_4x_4 + (1 \times b)$ What will be the value of y for the given scenario? a) 0.8 b) 1.0 c) 1.2 d) 1.4	
iv	What is the main disadvantage of evaluating a model using the same data it was trained on? a) It saves time b) It may lead to overfitting and overly optimistic results c) It reduces computational requirements d) It ensures better accuracy	1
v	In a grayscale image, what does a pixel value of 0 represent? a) White b) Black c) Gray d) Transparent	1
vi	Which NLP application automatically identifies whether a customer review is positive, negative or neutral? a) Machine Translation b) Sentiment Analysis c) Text Classification d) Keyword Extraction	1
Q5	**Answer any 5 out of the given 6 questions (1 × 5 = 5 marks)**	
i	You are deciding whether to donate to a charity helping children in your city or a charity helping children in a distant country. Which ethical principle might unconsciously influence your decision? a) Location of the recipient b) Color of the charity's logo c)Temperature on donation day d)Font used in the charity's brochure	1
ii	A model predicted a house would sell for ₹5,20,000, but it actually sold for ₹6,00,000. What is the error rate of this prediction (rounded to three decimal places)? a) 0.133 b) 0.154 c) 0.120 d) 0.180	1
iii	The Computer Vision task that involves identifying what objects are present in an image and determining their exact location with bounding boxes is called: a) Image Classification b) Image Segmentation c) Object Detection d) Feature Extraction	1
iv	_____ is the outcome when the model wrongly predicts the positive class as negative class.	1
v	Which type of chatbot requires advanced language processing capabilities, can learn from conversations, and provides more sophisticated responses? a) Script Bot b) Smart Bot c) Rule-based Bot d) Simple Bot	1
vi	In text processing, what is the difference between stemming and lemmatization? a) Stemming always produces meaningful words, lemmatization may not b) Lemmatization produces meaningful words, stemming may not c) Both produce the same results d) Stemming is slower than lemmatization	1

SECTION B: SUBJECTIVE TYPE QUESTIONS

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

Q6	What is self-awareness? Why is it important for personal development?	2
Q7	List any four characteristics of an effective communicator.	2
Q8	Explain two ways in which strong ICT skills can help students in their academic journey	2
Q9	Priya runs a small bakery business. Every morning, she plans the day's production, manages inventory, assigns tasks to her staff, and ensures quality control. She also handles customer complaints personally and looks for ways to improve her products. From the paragraph, identify and explain two entrepreneurial skills that Priya demonstrates.	2
Q10	What is E-waste? Mention any two ways to properly dispose of or manage E-waste	2

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

Q11	Briefly explain the Data Exploration and Modeling stages of the AI Project Cycle	2
Q12	Differentiate between the following: a) Artificial Intelligence (AI) and Machine Learning (ML) b) Labeled data and Unlabeled data	2
Q13	What is reinforcement learning? How is it different from supervised learning?	2
Q14	Explain the train-test split in model evaluation. Why is it necessary to split the data?	2
Q15	What is the difference between RGB images and grayscale images? Give one example of where each type is commonly used.	2
Q16	Identify the NLP stage and explain: Before: "the students are going to school tomorrow" After: "The students are going to school tomorrow.	2

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

Q17	Read the case study below and answer the following questions: A technology company developed an AI-powered hiring system to screen job applications. The algorithm was trained on data from the company's past 10 years of hiring decisions. However, the system started rejecting qualified female candidates for technical positions, even when they had the same or better qualifications than male candidates. Upon investigation, it was discovered that the company had historically hired more men for technical roles, and this bias was reflected in the training data. The AI system learned and amplified this bias, leading to discriminatory outcomes. Questions: a) Identify two reasons why the algorithm produced biased results. b) Suggest two principles from the bioethics framework that could help address this problem and explain how they apply	4

Q18	a) What is unsupervised learning? b) Name and explain the two main categories of unsupervised learning. c) Provide one real-world example for each category	4
Q19	Identify the type of Machine Learning (ML) or Deep Learning (DL) model/application being used in the following scenarios: a) An e-commerce website recommends products based on grouping customers with similar purchasing behavior, without any predefined categories. b) A bank uses an AI system to detect fraudulent transactions by training it on historical data labeled as "fraudulent" or "legitimate." c) A robot learns to navigate a maze by trying different paths and receiving rewards when it gets closer to the exit. d) A neural network identifies and classifies different types of animals in wildlife camera footage	4
Q20	Read the following paragraph and answer the questions that follow: A school tested an AI model to predict whether students would need extra tutoring based on their mid-term exam scores. Out of 200 students: 60 students actually needed tutoring (Positive class) 140 students did not need tutoring (Negative class) The model's predictions were: Correctly identified 45 students who needed tutoring Correctly identified 100 students who did not need tutoring Incorrectly predicted 40 students would need tutoring (but they didn't) Incorrectly predicted 15 students would not need tutoring (but they did) Questions: a) Draw the confusion matrix based on the above information. b) Calculate the accuracy of this classification model. Show your working. c) Calculate the precision for the positive class (students needing tutoring).	 2 1 1
Q21	Read the following three documents and answer the questions that follow: Document 1: "AI is transforming education" Document 2: "Students love learning AI" Document 3: "Teachers and students use AI tools" After performing basic text pre-processing (removing punctuation, converting to lowercase, and tokenizing), the documents become: Document 1: [ai, is, transforming, education] Document 2: [students, love, learning, ai] Document 3: [teachers, and, students, use, ai, tools] Questions: a) Create the dictionary (vocabulary) of unique words from all three documents. b) Construct the document vector for Document 2 using the Bag of Words approach. c) Explain what information the document vector provides. d) Calculate the Document Frequency (DF) for the word "ai"	4