केन्द्रीय विद्यालय संगठन, अहमदाबाद संभाग

Kendriya Vidyalaya Sangathan, Ahmedabad Region

प्री-बोर्ड - II परीक्षा (2025-26)

PRE-BOARD- II EXAM (2025-26)

SUBJECT: ARTIFICIAL INTELLIGENCE (417)

CLASS: X

Time: 2 Hours **M.M.: 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):**

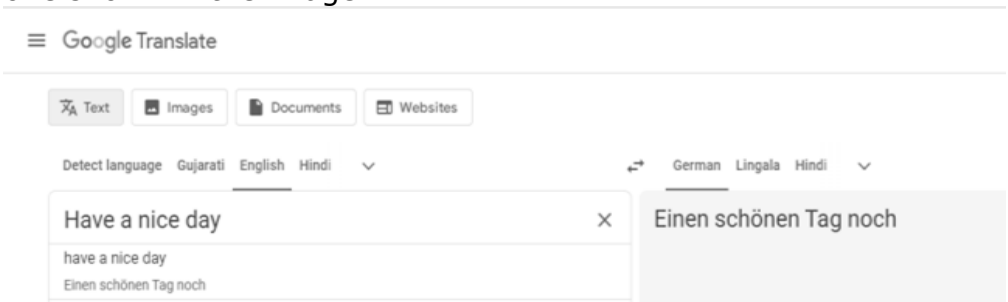
i. This section has 16 questions.
ii. A candidate has to do 10 questions.
iii. Do as per the instructions given.
iv. Marks allotted are mentioned against each question/part.

SECTION A – OBJECTIVE TYPE QUESTIONS (24 Marks)

Q.1	Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 Marks)	
i)	Which of the following is not a factor affecting perspectives in communication? (a) Language (b) Visual perception (c) Culture (d) Punctuation	1
ii)	Prolonged exposure to which of the following psychological states is most likely to precipitate adverse physiological conditions such as hypertension, weakened immunity, and cognitive disturbances? a) Discipline b) Timeliness c) Stress d) Goal-setting	1
iii)	When a student remains calm under pressure, takes responsibility for mistakes, and learns from them, it reflects which self-management trait? a) Emotional intelligence b) Leadership c) Technical knowledge d) Social influence	1
iv)	Arjun accidentally deleted a file from his computer. Later, he realized he needs it back. What should he do first?	1

	a) Restart the computer b) Format the drive c) Check the Recycle Bin d) Run Disk Cleanup	
v)	Assertion (A): Entrepreneurs are always willing to take risks because they want to lose money. Reason (R): Taking risks helps entrepreneurs explore new opportunities and earn profits. 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.	1
vi)	Using public transport, carpooling, or cycling instead of driving individual cars helps in — a) Increasing air pollution b) Reducing greenhouse gas emissions c) Increasing fuel consumption d) Causing traffic jams	1
Q.2	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i)	In an Ethical AI framework, ensuring that users understand how AI systems make decisions is called _____.	1
ii)	A school is developing an AI system to help teachers track students' attendance automatically using face recognition. During testing, the system fails to recognize students with certain hairstyles and skin tones. Question: Which ethical issue is most relevant here? a) Privacy Violation b) Bias in Data and Model c) Transparency d) Accuracy	1
iii)	An AI system that explains its decisions clearly to users supports the principle of transparency. True or False.	1
iv)	A developer uses public data from social media without user consent to train an AI chatbot. Later, it's found that private information is being used. Which AI ethical principle has been violated? a) Fairness b) Reliability c) Accountability d) Privacy and Data Protection	1
v)	Assertion (A): The Problem Scoping stage helps in clearly identifying the need for an AI solution. Reason (R): It ensures that the AI model is trained using a large dataset without understanding the problem. 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.	1
vi)	In the Evaluation phase of the AI Project Cycle, the model's performance is tested using _____ data to check its accuracy and reliability.	1
Q.3	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i)	Ethical frameworks in AI emphasize fairness, but in a scenario where an AI system for job recruitment uses historical data biased towards certain demographics, leading to discriminatory outcomes, which principle is most directly violated?	1

	a) Transparency b) Accountability c) Fairness and non-discrimination d) Privacy protection	
ii)	In _____ method of data collection, researchers interact in their natural environment to help and understand their behaviors, perceptions, and experiences for research purposes a) Survey b) Observation c) API d) Sensors	1
iii)	A smart surveillance AI triggers alarms for normal activities like students running during break time. Which stage of the AI Project Cycle was likely weak? a) Model Evaluation b) Problem Scoping c) Deployment d) Data Acquisition	1
iv)	Assertion (A): Classification models can be used to predict continuous numerical outputs. Reason (R): Classification involves grouping data into predefined categories. 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 false but R is true. d) A is true but R is false.	1
v)	Which evaluation metric is most commonly used for classification models? a) Mean Squared Error b) Accuracy c) Clustering Score d) Range	1
vi)	Imagine an AI playing a game and learning to win by trial and error. This is an example of: a) Supervised Learning b) Unsupervised Learning c) Reinforcement Learning d) Natural Language Processing	1
Q.4	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i)	Assertion: Accuracy is an evaluation metric that allows you to measure the total number of predictions a model gets right. Reasoning: The accuracy of the model and performance of the model is directly proportional, and hence better the performance of the model, the more accurate are the predictions. Choose the correct option: a) Both A and R are true and R is not the correct explanation for A b) Both A and R are true and R is the correct explanation for A c) A is True but R is False d) A is false but R is True	1
ii)	What is the primary objective of the Convolution Layer in a Convolutional Neural Network (CNN)? a) To flatten the input image b) To perform element-wise multiplication of image arrays c) To reduce the spatial size of the input image d) To assign importance to various aspects/objects in the image	1
iii)	In the byte image format, what is the range of possible pixel values?	1

	a) 0 to 10 b) 0 to 100 c) 0 to 1000 d) 0 to 255	
iv)	What is the primary challenge faced by computers in understanding human languages? a) Incompatibility with numerical data b) Lack of computational power c) Complexity of human languages d) Limited vocabulary	1
v)	A neural network with multiple layers of interconnected neurons is called a: a) Single-layer network b) Deep Neural Network c) Linear network d) Perceptron	1
vi)	Which of the games below is related to natural language processing? a) Voice Assistants b) Chatbots c) Mystery Animal d) Grammar Checkers	1
Q.5	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i)	Understanding user intent from the transcribed text is an example of a) Computer vision b) Vector compression c) Speech generation d) NLP	1
ii)	Which task is being performed by the traffic system? a) Image compression b) Feature scaling c) Object detection d) Text recognition	1
iii)	Which component of NLP is essential for generating accurate translations like the one shown in the image?  a) Tokenization b) Semantic understanding c) Image segmentation d) Pixel intensity analysis	1
iv)	Once the textual data has been collected, it needs to be processed and cleaned so that an easier version can be sent to the machine. This is known as _____.	1
v)	Determining if the face matches a stored identity is an example of_____ a) Image Classification b) Clustering c) Regression d) Translation	1

vi)	When a computer identifies tumors or fractures in MRI/CT images, this CV task is called: _____ a) Text Classification b) Object Detection c) Part-of-Speech Tagging d) Speech Recognition	1
SECTION B – SUBJECTIVE TYPE QUESTIONS (26 Marks)		
Answer any 3 out of the given 5 questions on Employability Skills (2 x 3 = 6 Marks) **Answer each question in 20 – 30 words.**		
Q.6	During a class discussion, the teacher notices that students often misunderstand each other's messages due to language issues, distractions, or unclear expressions. What do you understand by communication barriers in this situation?	2
Q.7	Pooja often finds it difficult to control her emotions and stay focused on her studies. Her teacher tells her that developing "self-regulation" can help her manage her behavior better. Explain what self-regulation means in this context.	2
Q.8	Read the situation and answer the question: Riya, a Class X student, loves using social media and online learning platforms. One day, she receives a message from an unknown account asking for her personal details, and her friend warns her not to share anything. This incident makes Riya think about how to stay safe online. Based on the situation, explain what cyber safety is and why it is important. Give one example.	2
Q.9	Isha starts an online store but constantly analyzes customer feedback to improve her offerings. Identify the entrepreneurial skill Isha is using.	2
Q.10	How does eco-friendly transport reflect green skills? Give example and benefits.	2
Answer any 4 out of the given 6 questions on subject specific skills (2 x 4 = 8 Marks) **Answer each question in 20 – 30 words.**		
Q.11	A tech company develops a virtual assistant that understands and responds to customer queries in natural language, improving user experience in e-commerce. What is Natural Language Processing (NLP)? Explain any two real-life applications of NLP with examples.	2
Q.12	Explain the term "Data Privacy" with the help of a simple example.	2
Q.13	A student is editing a photograph and zooms in closely. She notices that the image breaks into tiny squares of different colors. She wonders what these tiny squares represent in digital images. Based on the situation, what is a pixel in the context of images? Explain with an example.	2
Q.14	An AI Chatbot wrongly recommends harmful products to users. What project cycle stage may be weak?	2
Q.15	Ajay is working on a school AI project where he needs to collect information from different data sources such as websites, surveys, and online databases. Before he starts gathering the data, he wants to ensure that the information he collects is reliable and safe to use. Suggest any two important points Ajay should keep in mind while accessing data from any data source. Give an example.	2
Q.16	Differentiate between Classification and Clustering in AI. (Any four points)	2
Answer any 3 out of the given 5 questions in 50-80 words each (4 x 3 = 12 Marks)		
Q.17	A city plans to use an AI system to predict areas with high water wastage. The team collects data from sensors but later finds missing values and incorrect readings. Some citizens are concerned about how their water usage data will be stored and whether it will be shared. Identify the AI project cycle stages involved and discuss	4

<table>
<tr><td></td><td>the ethical concerns raised by citizens.</td><td></td></tr>
<tr><td>Q.18</td><td>Differentiate between rule-based and learning-based AI modelling approaches.</td><td>4</td></tr>
<tr><td>Q.19</td><td>Akhil is working on his first AI project in school. His teacher tells him that before building any solution, he must correctly scope the problem. She also mentions two important tools that can help: the 4W Problem Canvas and the Problem Statement Template. Akhil wants to understand how both of these help in defining the problem clearly. Based on the situation, answer the following:

a) What is the 4W Problem Canvas, and how does it help in scoping an AI problem?

b) Explain the purpose of the Problem Statement Template in AI projects.</td><td>4</td></tr>
<tr><td>Q.20</td><td>Read the following paragraph and answer the questions that follow: A hospital uses an AI tool to detect a rare disease. Doctors observe that although the tool is fast, it often marks healthy people as diseased.

The hospital tests the tool using 200 patients and prepares the following confusion matrix. Find Calculate Accuracy, Precision, Recall, and F1-score.

<table><tr><td>A hospital uses an AI tool to detect a rare disease</td><td>Predicted+</td><td>Predicted-</td></tr><tr><td>Actual +</td><td>45 (TP)</td><td>35 (FP)</td></tr><tr><td>Actual -</td><td>15 (FN)</td><td>105 (TN)</td></tr></table></td><td>4</td></tr>
<tr><td>Q.21</td><td>Read the following paragraph and answer the questions that follow:

A customer service company introduces two different chatbots on their website. The first chatbot follows a fixed set of rules. It displays options like “Press 1 for order status”, “Press 2 for refund”, and responds only based on pre-written scripts. It cannot understand natural language and fails when customers type long queries.

The second chatbot is more advanced. It learns from previous conversations, understands user intent, and improves its responses over time. It can interpret natural language, identify emotions, and even suggest solutions without fixed rules.

Based on the paragraph, answer the following questions:

a) Identify the two types of chatbots described in the case.

b) Explain how the working of these two chatbots is different.

c) Which chatbot is more suitable for handling complex customer queries? Why?

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