

पूर्व -परिषदीय परीक्षा-2025-26 / PRE-BOARD EXAM-(2025-26)

कक्षा X / CLASS - X

TIME: 2 Hrs

विषय: / SUBJECT: ARTIFICIAL INTELLIGENCE (417)

MM: 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**

Q. 1	Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)	
i.	In a professional meeting, the manager presents a new idea to the team. Later, team members share their opinions, ask questions, and give suggestions. This exchange of reactions from the team is called ____. (a) Feedback (b) Encoding (c) Message (d) Channel	1
ii.	Doing meditation and breathing exercises every day mainly improves which self-management skill? (a) Stress Management (b) Decision Making (c) Independence (d) Self-control	1
iii.	A harmful software program that pretends to be a useful application is known as ____ (a) Trojan Horse (b) Firewall (c) Antivirus (d) Operating System	1

<b>iv.</b>	_____ the work is all about identifying and noting how we spent our time, and analysing how to spend our time effectively. (a) Organising (b) Prioritising (c) Controlling (d) Tracking	<b>1</b>
<b>v.</b>	Starting a new business and generating jobs for others is an act of _____. (a) Entrepreneurship (b) Management (c) Communication (d) Employment	<b>1</b>
<b>vi.</b>	Excessive use of polythene bags harms the environment and results in _____. (a) Ecological Imbalance (b) Data Privacy (c) Natural Disaster (d) Organizational Barrier	<b>1</b>

<b>Q. 2</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
<b>i.</b>	Which ethical framework is widely used in healthcare and medicine? (a) Utilitarianism (b) Bioethics (c) Cultural Ethics (d) Duty-based Ethics	<b>1</b>
<b>ii.</b>	_____ the whole corpus is divided into sentences. Each sentence is taken as a different data so now the whole corpus gets reduced to sentences. a. Sentence Normalization b. Sentence Segmentation c. Sentence Tokenization d. All of the above	<b>1</b>
<b>iii.</b>	Face recognition system is based on _____. (a) NLP (b) Computer Vision (c) Data Science (d) Robotics	<b>1</b>
<b>iv.</b>	_____ is the percentage of correct predictions out of all observations. (a) Accuracy (b) Precision (c) Recall (d) F1 Score	<b>1</b>
<b>v.</b>	The sub-field of AI that processes human languages is _____. (a) NLP (b) Machine Learning (c) Data Science (d) Deep Learning	<b>1</b>
<b>vi.</b>	In _____, the machine trains itself with huge amounts of data. (a) Supervised Learning (b) Deep Learning (c) Clustering (d) Rule Based	<b>1</b>

<b>Q. 3</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
<b>i.</b>	Artificial Intelligence (AI) is a rapidly growing field in Computer Science. It enables machines to perform tasks that normally require human intelligence, such as problem-solving, decision-making, and natural language understanding. Which of the following scenarios best demonstrates the application of Artificial Intelligence? (a) A calculator solving arithmetic problems instantly (b) A text editor underlining spelling mistakes automatically (c) A voice assistant like Alexa answering questions and controlling smart devices (d) A barcode scanner reading product codes at a supermarket	<b>1</b>
<b>ii.</b>	Give two methods of data collection. (a) Surveys & Interviews (b) Thoughts & Dreams (c) Myths & Rumours (d) None	<b>1</b>
<b>iii.</b>	_____ device helps to communicate with humans and abilities to make humans lives easier. a. Google Assistant b. Cortana c. Siri d. All of the above	<b>1</b>
<b>iv.</b>	If Prediction = Yes and matches Reality = Yes, it is _____. (a) True Negative (b) True Positive (c) False Negative (d) False Positive	<b>1</b>
<b>v.</b>	Which evaluation method calculates fraction of positives correctly identified? (a) Recall (b) Accuracy (c) F1 Score (d) Precision	<b>1</b>
<b>vi.</b>	Examples of Supervised Learning models are _____. (a) Classification & Regression (b) Clustering & Reduction (c) NLP & CV (d) Tokenisation & Normalisation	<b>1</b>
<b>Q. 4</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
<b>i.</b>	Machine Learning can best be described as _____. (a) The ability of systems to learn patterns from data (b) Writing fixed instructions for a computer (c) Only solving equations (d) A manual process of coding rules	<b>1</b>
<b>ii.</b>	Which of the following best explains the role of Computer Vision in healthcare? (a) Detecting tumours from medical scans (b) Converting speech into text (c) Analysing purchase history for predictions (d) Translating languages	<b>1</b>

<b>iii.</b>	_____ bots work around a script which is programmed in them. a. Script-bot b. Smart-bot c. Both a) and b) d. None of the above	<b>1</b>
<b>iv.</b>	Breaking down a paragraph of text into smaller units like words or phrases is called _____. (a) Tokenisation (b) Stemming (c) Parsing (d) Lemmatization	<b>1</b>
<b>v.</b>	In the AI Project Cycle, Evaluation is done to _____. (a) Check the accuracy and performance of the model (b) Collect more training data (c) Convert text into numerical format (d) Train the algorithm	<b>1</b>
<b>vi.</b>	_____ is the AI field that enables machines to interpret and understand visual information from the real world. (a) Computer Vision (b) Natural Language Processing (c) Data Collection (d) Modelling	<b>1</b>

<b>Q. 5</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
<b>i.</b>	_____ refers to AI models where machines learn by themselves. (a) Rule Based (b) ML (c) Data Science (d) Algorithm	<b>1</b>
<b>ii.</b>	Mapping Prediction vs Reality is done with _____. (a) Confusion Matrix (b) Accuracy (c) Recall (d) Prediction Table	<b>1</b>
<b>iii.</b>	_____ is an application of NLP. (a) Automatic Summarisation (b) Classification (c) Regression (d) Clustering	<b>1</b>
<b>iv.</b>	Last stage of AI project cycle is _____. (a) Problem Scoping (b) Data Acquisition (c) Evaluation (d) Modelling	<b>1</b>

v.	Pixel refers to _____. (a) Smallest unit of image (b) AI Algorithm (c) Text Data (d) Token	1
vi.	Which scenario has high False Positive cost? (a) Spam Filter (b) Weather forecast (c) Game scoring (d) Calculator	1

### **SECTION B: SUBJECTIVE TYPE QUESTIONS**

**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	List two best practices for effective communication.	2
Q. 7	Mention four activities that help in stress management.	2
Q. 8	A fake update notification tricked users into downloading harmful code disguised as useful software. What is this type of malware called in computer terminology?	2
Q. 9	List four qualities of an entrepreneur.	2
Q. 10	Name two human activities leading to environmental degradation.	2

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

Q. 11	“An AI healthcare tool provides better quality reports for patients who can pay more and less accurate reports for poor patients. “ Which principle of bioethics is violated and why?	2
Q. 12	<b>Sentence 1:</b> “Artificial intelligence makes machines think like humans.” <b>Sentence 2:</b> “Machines learn from data using intelligence.” Find the document vectors for both sentences using the Bag-of-Words model.	2
Q. 13	“A self-driving car uses cameras to detect traffic lights and pedestrians.” How does AI use a Neural Network to make driving decisions?	2
Q. 14	“An AI translation app converts Hindi text into English.” Which domain of AI is used in this task? Explain about it.	2
Q. 15	“An AI camera captures a photo that looks blurry when zoomed in. The developer realizes the image has fewer pixels. “ What does pixel mean in an image, and how does resolution affect image clarity?	2

Q. 16	If an AI model is applied to predict rainfall for agriculture, which metric (Accuracy, Precision, Recall, F1 Score) would be most important, and why?	2
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Answer any 3 out of the given 5 questions in 50– 80 words each (4 x 3 = 12 marks)

Q. 17	<p><b>Case Study:</b> A hospital is using AI to recommend treatments for patients. The doctors want to ensure that the AI system is safe, respects patient privacy, and makes fair decisions. They are considering different ethical frameworks like <b>Bioethics, Rights, Utility, and Virtue</b> to guide their AI practices.</p> <p><b>Question</b> (i) Which ethical framework will be most suitable for the healthcare setting in this case? Why? (ii) Explain how <b>value-based frameworks</b> (Rights, Utility, Virtue) differ from <b>sector-based frameworks</b> (like Bioethics). (iii) Suggest one example of applying the <b>Utility framework</b> in AI decision-making.</p>	4
Q. 18	Prepare a 4W Project Canvas for implementing an AI-based Online Fraud Detection solution in digital payment systems.	4
Q. 19	<p>In text processing, sometimes words are reduced to their root form. Example 1: playing → play, played → play Example 2: better → good Questions: (i) Which two techniques are shown in the examples? (ii) How is Stemming different from Lemmatization? (iii) Write one example of each (should be different from given examples)</p>	4
Q. 20	<p><b>A company builds two AI systems:</b> <b>First AI System:</b> One predicts whether an email is spam or not spam. <b>Second AI System:</b> Another predicts the price of a house based on its area and location. <b>Questions:</b> (i) Which sub-category of Supervised Learning is used for spam detection? (ii) Which sub-category is used for predicting house price? (iii) Name the main category under which both these models come. (iv) Write one difference between Classification and Regression.</p>	4
Q. 21	<p><b>Medical Diagnosis System:</b> A hospital tested an AI system to detect a disease on 300 patients: True Positive (TP) = 90 False Positive (FP) = 20 False Negative (FN) = 10 True Negative (TN) = 180 (i) Construct the Confusion Matrix. (ii) Compute Accuracy, Precision, Recall, and F1 Score. (iii) Comment whether the model is more suitable for screening or final diagnosis.</p>	4