



Delhi Public School, Howrah

PERIODIC TEST – II (2025-2026)

CLASS – X

Care must be taken not to write anything on the question paper. All the questions must be attempted in the correct sequence.

SUBJECT: ARTIFICIAL INTELLIGENCE (417)

THEORY EXAMINATION

Time Allowed:- 2 Hours

F.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

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 barrier to effective communication?
 - A) Noise in surroundings
 - B) Using technical jargon unnecessarily
 - C) Active listening
 - D) Lack of attention
- ii. Identify the correct example of a descriptive feedback from the following.
 - A) "You are always careless."
 - B) "Great job on your presentation; if you add more examples, it will be even clearer."
 - C) "Your handwriting is very bad."
 - D) "I don't think you can improve."
- iii. _____ is a useful characteristic of self-management for students.
 - A) Procrastination
 - B) Goal setting and time management
 - C) Avoiding challenges
 - D) Ignoring feedback
- iv. Self-motivation helps a person to:
 - A) Depend on others for encouragement
 - B) Stay focused and keep moving towards goals
 - C) Give up easily when challenges arise
 - D) Avoid setting personal targets
- v. Which of the following is an example of system software?
 - A) MS Word
 - B) Windows 10
 - C) Photoshop
 - D) Google Chrome
- vi. The function of Disk Defragmenter is to:
 - A) Delete all files permanently
 - B) Rearrange scattered data on the hard disk for faster access
 - C) Protect the system from viruses
 - D) Compress large files into smaller sizes

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

- i. Artificial Intelligence (AI) is best defined as:
A) Writing computer programs only
B) Making machines mimic human intelligence and decision-making
C) Storing large amounts of data
D) Designing computer networks
- ii. Deep Learning is mainly powered by:
A) Decision Trees B) Artificial Neural Networks C) Random Sampling D) Clustering
- iii. In Machine Learning, predicting house prices is an example of:
A) Classification B) Regression C) Clustering D) Sampling
- iv. Which of the following correctly differentiates Rule-Based and Learning-Based AI?
A) Rule-Based AI learns patterns and Learning-Based AI uses fixed rules
B) Both use predefined instructions only
C) Rule-Based AI uses fixed instructions and Learning-Based AI adapts from data
D) Neither can be applied to real-world problems
- v. Reinforcement Learning works on the principle of:
A) Learning only from labeled data
B) Using pre-defined “if-else” rules
C) Trial-and-error with rewards and penalties
D) Grouping similar data points
- vi. Choose the correct example of a Rule-Based AI system from the following.
A) Netflix movie recommendation
B) Spam email detection using ML
C) A chatbot answering questions using “if-then” rules
D) A self-driving car using deep learning

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

- i. The process of assigning objects into categories like “spam” or “not spam” is an example of:
A) Regression B) Classification C) Clustering D) Sampling
- ii. _____ is/are a grayscale image representation?
A) Three channels: Red, Green and Blue
B) Two channels: Black and White
C) One channel: Intensity values (0–255)
D) Multiple channels: Hue and Saturation
- iii. Identify the correct application of Computer Vision in SDGs (Sustainable Development Goals).
A) Drones mapping crops to improve food security
B) Predicting share market trends
C) Recording student attendance manually
D) Encrypting passwords
- iv. A company uses Computer Vision cameras in warehouses to monitor inventory. When shelves go empty, the system alerts staff for restocking. The feature of AI that is demonstrated here is _____.
A) Automation and efficiency improvement B) Entertainment and gaming
C) Language translation D) Manual counting of products
- v. The detection of empty shelves is an example of:
A) Classification B) Image Localization C) Object Detection D) Regression
- vi. A company is developing an AI model to detect cracks in bridges and roads using a camera feeds. The computer vision technique most suitable for this task is _____.
A) Image Classification B) Object Detection C) Optical Character Recognition D) Image Resizing

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

- i. What is the central value of a dataset when arranged in ascending order?
A) Mean B) Mode C) Median D) Variance
- ii. Select the appropriate example of Mode in real life from the following.
A) Finding the middle salary of employees B) Identifying the most purchased product in a store
C) Calculating average marks of students D) Measuring the spread of data

iii. What does Probability measure?

- A) The total number of observations
B) The likelihood of an event occurring
C) The difference between the highest and lowest values
D) The average of all values

iv. A shopkeeper checks which product sells the most daily. This is an example of:

- A) Data Science
B) Probability
C) Statistical Data
D) Artificial Intelligence

v. Which of the following measures indicates how far values are spread from the mean?

- A) Standard Deviation and Variance
B) Mode and Median
C) Probability and Sampling
D) Mean and Median

vi. Outlier refers to:

- A) The most frequently occurring value in a dataset
B) A value that is very close to the mean
C) A value significantly different from the other values
D) The middle value of the dataset

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

i. A retail company uses Computer Vision to track customer movement inside stores. AI-powered cameras identifies the sections that customers visit most, estimate inventory levels, and suggest optimized product placement. The Computer Vision task that is most relevant in tracking customer movements is _____.

- A) Image Classification
B) Object Detection
C) Image Filtering
D) Regression Analysis

ii. If Computer Vision detects when shelves are empty and signals restocking, which benefit of AI is highlighted here?

- A) Cost Reduction and Efficiency
B) Data Encryption
C) Entertainment Value
D) Data Privacy

iii. An AI-powered app uses a smartphone camera to translate foreign language signs in real time using Optical Character Recognition (OCR). It overlays the translated text directly on the image, making it appear as part of the scene. The app primarily relies on _____ technology.

- A) Data Mining
B) Augmented Reality + Computer Vision
C) Rule-Based AI
D) Speech Processing

iv. **Assertion (A):** Computer Vision allows machines to extract and interpret information from images and videos.

Reason (R): Image Processing and Computer Vision are the same because both only enhance image quality.

- 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

v. **Assertion (A):** Image segmentation divides an image into multiple meaningful sections.

Reason (R): This process is useful for applications like medical imaging, where identifying different tissues is crucial.

- 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

vi. A hospital uses Computer Vision in Medical Imaging to detect brain tumors. The system highlights abnormal regions in MRI scans, helping doctors in faster and more accurate diagnosis.

The _____ feature of Computer Vision is most beneficial in this case.

- A) Pixel-based analysis for anomaly detection
B) Translation of text into speech
C) Customer movement tracking
D) Advertisement personalization

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.

6. Barriers of effective communication are categorized as internal, external and message formation barriers. State and explain any two types of external barriers.
7. Discuss any two skills required for working independently.
8. Niharika is preparing for her board exams and often feels stressed due to the heavy workload. Which two self-management skills can she use to reduce her stress and how will these skills help her in handling the situation?
9. What is file and folder management? Write any four best practices.
10. Aman notices that his computer has become very slow and is running out of storage space. How can the Disk Cleanup utility help him in this situation? Mention any two benefits of using it.

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

11. Explain Reinforcement Learning with a real-world example.
12. During a machine learning project, Meera trains a model that performs very well on the training data but gives poor results on new test data. The problem she found is termed as Overfitting of data. What do you understand by an Overfitted Model?
13. Rahul has developed a machine learning model for classifying whether emails are 'threat' or 'not threat'. To evaluate his model's performance, his teacher suggests using a confusion matrix. Explain confusion matrix. Demonstrate it with the TP, FP, TN and FN cases.
14. What is a Normal Distribution? Give a real-life example.
15. Explain the difference between Grayscale and RGB images with reference to pixel values.
16. Differentiate between Computer Vision and Image Processing with examples.

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

17. Anita wants to build a machine learning model to predict house prices in her city. Explain the workflow of how she should develop this model, step by step, with the help of this example.
18. Rohan wants to create an AI-based chatbot for his school project but does not know programming. He decides to use a No-Code AI tool. Discuss any two benefits and two disadvantages he might face while using such tools.
19. Define the term Statistical Data. Explain the role of Mean, Median, and Mode in Descriptive Statistics with one real-life application each.
20. How is Computer Vision used in Self-Driving Cars? Describe the difference between Image Classification, Localization, and Object Detection in Computer Vision with respect to self-driving cars.
21. Calculate Accuracy, Precision, Recall and F1 Score for the following Confusion Matrix on Spam Filtering: Suggest which evaluation metric would not be a good parameter here and why?

Confusion Matrix on SPAM FILTERING:	Reality: 1	Reality: 0
Prediction: 1	10	55
Prediction: 0	10	25