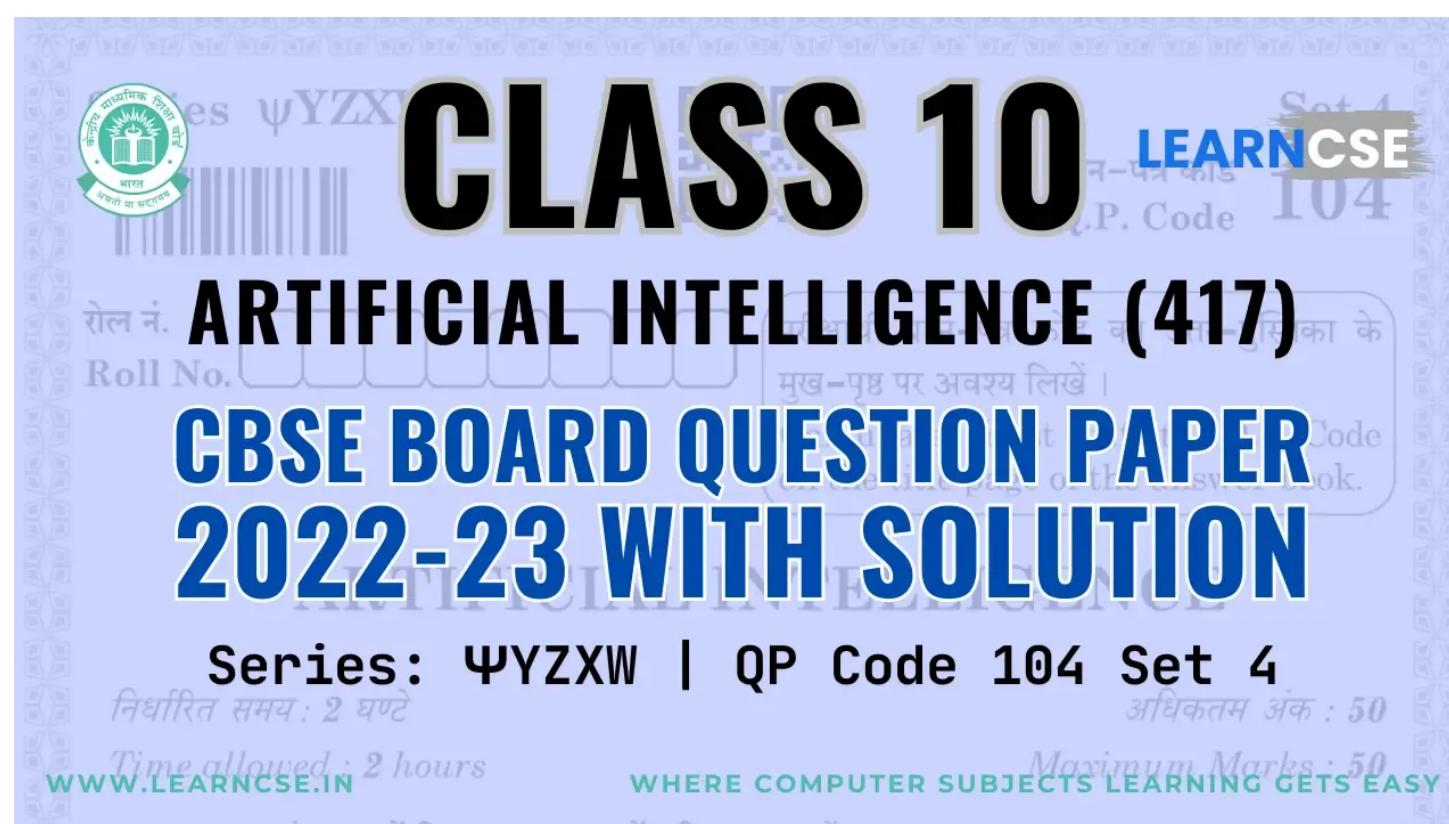


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CBSE Class 10 AI 417 Question Paper 2022-23 with Solution

Preparing for the CBSE board exam becomes much easier when students practice previous year question papers with accurate solutions. To support both students and teachers, we are updating the [CBSE Class 10 Artificial Intelligence \(AI\) Code 417 Question Paper 2022-23](#) with complete, step-by-step solutions based on the latest CBSE guidelines.



This updated [Class 10 AI Code 417 Previous Year Question Paper](#) is designed to help learners understand the exam pattern, marking scheme, and expected answers, making board exam preparation more structured and effective.

CBSE CLASS 10 ARTIFICIAL INTELLIGENCE (417) - SOLUTION

Class 10 AI (Code 417) - Previous Year Question Paper (Session 2022-23)

Series ΨYZXW

Question Paper Code 104 Set 4

Time allowed : 2 hour

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):
 - This section has 05 questions.
 - Marks allotted are mentioned against each question/part.
 - There is no negative marking.
 - Do as per the instructions given.
7. SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):
 - This section has 16 questions.
 - A candidate has to do 10 questions.
 - Do as per the instructions given.
 - 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 (1X4=4 marks)

(i) Which of the following is not a task of an entrepreneur?

- (a) Sharing of wealth
- (b) Preferably using foreign materials**
- (c) Fulfilling customer needs
- (d) Helping society

(ii) GUI stands for:

- (a) Graphical User Interaction
- (b) Graphical User Interface**
- (c) Graphical Upper Interface
- (d) None of these

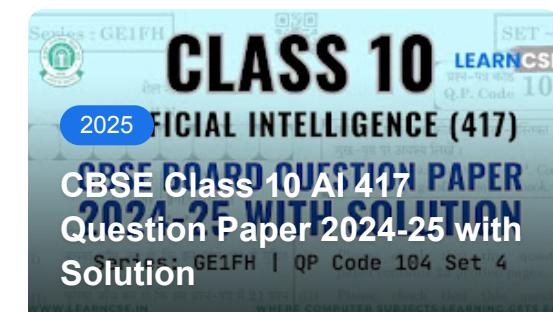
Class 10 SQP, PYQP, Notes, MCQs and more

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| IT (402) SQP | IT (402) PYQP |
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(iii) Which of the following is a function of an entrepreneur?

- (a) Following the traditional method of business
- (b) Innovation**
- (c) Keeping all the profit to himself/herself
- (d) Avoid taking decisions

(iv) Right clicking on File or Folder opens

- (a) Main Menu
- (b) Shortcut Menu**
- (c) Back Menu
- (d) Front Menu

(v) Stress management is vital because it leads to following benefits:

- (a) Improves mood
- (b) Boosts immune system
- (c) Promotes longevity
- (d) All of the above**

(vi) Which of the following is an inner urge to do something, achieve their goals without any external pressure / lure for award or appreciation?

- (a) Self-awareness
- (b) Self-motivation**
- (c) Self-regulation
- (d) Self-control

Q.2 Answer any 5 out of the given 6 questions (1X5=5 marks)

(i) Two popular examples of pocket assistants are ____ and ____.

Answer: Google Assistant, Apple Siri, Amazon Alexa

(ii) This is a fact that all human beings have all nine types of intelligences, but at different levels. Name any two such intelligences.

Ans: Mathematical Logical reasoning, Linguistic Intelligence, Spatial Visual Intelligence, Kinesthetic Intelligence, Musical Intelligence, Intrapersonal Intelligence, Existential Intelligence, Naturalist Intelligence, Interpersonal Intelligence

(iii) Identify the incorrect statements from the following:

- (i) AI models can be broadly categorized into four domains.**
 - (ii) Data sciences is one of the domain of AI model.**
 - (iii) Price comparison websites are examples of data science.**
 - (iv) The information extracted through data science can be used to make decision about it.**
- (a) Only (iv)
 - (b) (iii) and (iv)
 - (c) Only (i)**
 - (d) (i) and (ii)

(iv) During Data Acquisition, feeding previous data into the machine is called:

- (a) Training Data**
- (b) Predicting Data
- (c) Testing Data
- (d) Evaluating Data

(v) Regression is one of the type of supervised learning model, where data is classified according to labels and data need not to be continuous. (True / False)

Ans: **False**

(vi) Which of the following is defined as the measure of balance between precision and recall?

- (a) Accuracy
- (b) F1 Score**
- (c) Reliability
- (d) Punctuality

Q.3 Answer any 5 out of the given 6 questions (1X5=5 marks)

(i) Email filters, spam filters, smart assistants are the examples of :

- (a) Pocket Assistants
- (b) CV
- (c) NLP**
- (d) Evaluation

(ii) Select the correct features of Smart Bot:

- (a) Smart-bots are flexible and powerful
- (b) Coding is required to take this up on board
- (c) Smart bots work on bigger databases and other resources directly
- (d) All of the above**

(iii) For ____ the whole corpus is divided into sentences. Each Sentence is taken as a different data so now the whole corpus gets reduced to sentences.

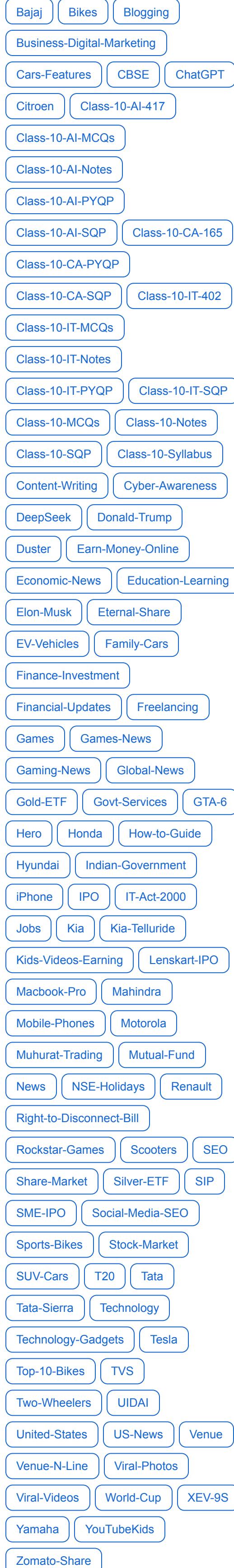
- (a) Text Regulation
- (b) Sentence Segmentation**
- (c) Tokenisation
- (d) Stemming

(iv) ____ helps to find the best model that represents our data and how well the chosen model will work in future.

Ans: **Evaluation**

(v) While evaluating a model's performance, recall parameter considers

- (i) False positive**



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(ii) True positive

(iii) False negative

(iv) True negative

Choose the correct option:

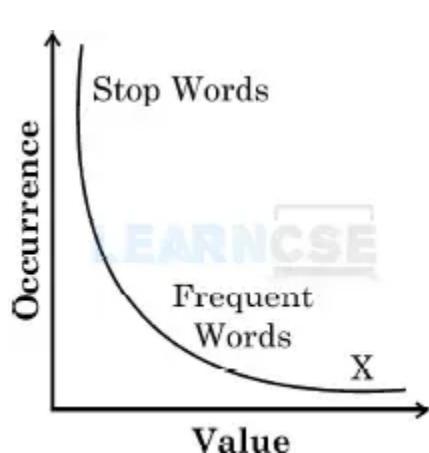
(a) only (i)

(b) (ii) and (iii)

(c) (iii) and (iv)

(d) (i) and (iv)

(vi) With reference to NLP, consider the following plot of occurrence of words versus their value:



In the given graph, X represents:

(a) Rare / valuable words

(b) Punctuation words

(c) Popular words

(d) Pronoun

Q.4 Answer any 5 out of the given 6 questions (1X5=5 marks)

(i) Which of the following is a feature of document classification?

(a) Helps in classifying the type and genre of a document

(b) Helps in creating a document

(c) Helps to display important information of a corpus

(d) Helps in including the necessary words in the text body

(ii) Two conditions when prediction matches with the reality are true positive and ____

Ans: **True Negative**

(iii) Which of the following is the correct feature of Neural network?

(a) It can improve the efficiency of two models

(b) It is useful with small dataset

(c) They are modelled on human brains and nervous system

(d) They need human intervention

(iv) With reference to AI domain, expand the term CV.

Ans: **Computer Vision**

(v) Under ____ one looks at various parameters which affect the problem we wish to solve, as this would make many lives better.

Ans: **Problem analysis / scoping**

(vi) In this learning model, the data set which is fed to the machine is labelled. Name the model.

Ans: **Supervised Learning**

Q.5 Answer any 5 out of the given 6 questions (1X5=5 marks)

(i) ____ is a term used for any word or number or special character occurring in a sentence.

(Token / Punctuator)

Ans: **Token**

(ii) When the prediction matches the reality, the condition is termed as ____

Ans: **True Positive**

(iii) Smart Assistants such as Alexa, Siri are the examples of:

(a) Natural Language Processing

(b) Data Science

(c) Machine Learning

(d) Computer Vision

(iv) 4Ws Problem Canvas is a part of:

(a) Problem Scoping

(b) Data Acquisition

(c) Modelling

(d) Evaluation

(v) It refers to the unsupervised learning algorithm which can cluster the unknown data according to the patterns or trends identified out of it.

(a) Regression

(b) Classification

(c) Clustering

(d) Dimensionality reduction

(vi) Which of the following talks about how true the predictions are by any model?

(a) Accuracy

(b) Reliability

(c) Recall

(d) F1 score



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Answer any 3 out of the given 5 questions on Employability Skills (2X3=6 marks) Answer each question in 20-30 words.

6. How does mediation help in Managing Stress? Discuss briefly.

Ans: Meditation helps in managing stress by calming the mind, improving focus, reducing anxiety, and promoting emotional balance, which leads to better mental health and overall well-being.

7. Give any two key roles performed by an entrepreneur.

- Ans: (i) Identifying business opportunities
(ii) Taking financial and business risks
(iii) Organizing and managing resources
(iv) Making decisions and leading the enterprise

8. Mention any two benefits of working independently.

- Ans: (i) Flexibility in work schedule
(ii) Freedom to make decisions
(iii) Opportunity to earn higher income
(iv) Better use of personal skills and creativity

9. Gurmeet has just bought a new computer for his office. Suggest him any two points which he should keep in mind to prevent his computer from virus infection.

Ans: Gurmeet should keep the following points in mind to prevent virus infection:

- (i) Install and regularly update a reliable antivirus software
(ii) Avoid downloading files from unknown or untrusted websites
(iii) Do not open suspicious email attachments or links
(iv) Keep the operating system and software updated

10. Define the term agricultural entrepreneurship. How are farmers benefitted from it?

Ans: **Agricultural entrepreneurship** means starting and managing farming-related activities in a business-oriented manner to earn profit by using new ideas, skills, and modern technology.

It **benefits** farmers by helping them increase their income, adopt improved and modern farming methods, create self-employment opportunities, and reduce their dependence on middlemen.

Answer any 4 out of the given 6 questions (2X4=8 marks) Answer each question in 20 – 30 words.

11. Explain any one example of AI bias.

Ans: **AI bias** refers to unfair or incorrect results produced by an AI system due to biased data, flawed algorithms, or human prejudice during its design and training.

Example: Some facial recognition tools show higher error rates for certain skin tones or genders because the training data is not diverse enough.

12. What is Dimensionality Reduction?

Ans: **Dimensionality Reduction** is the process of reducing the number of input features (data columns) in a dataset while keeping the most important information. It removes unnecessary data so the model becomes faster, simpler, and more accurate.

13. Define Chatbot. What are its types?

Ans: A chatbot is a computer program that simulates human conversation and interacts with users through text or voice to answer questions or provide information.

Types of chatbots are:

- (i) **Rule-based chatbots:** Work on predefined rules and fixed responses.
(ii) **AI-based chatbots:** Use artificial intelligence and machine learning to understand user queries and give smart responses.

14. Define Confusion Matrix.

Ans: A confusion matrix is a table used to check the performance of a classification model by comparing actual results with predicted results. It shows how many predictions are correct and how many are wrong.

15. Face lock feature of a smartphone is an example of computer vision. Briefly discuss this feature.

Ans: The face lock feature of a smartphone is an application of computer vision that allows the device to recognize a user's face for authentication. The camera captures the facial image and analyzes unique features such as the distance between eyes, shape of the nose, and facial structure. This data is then compared with the stored facial data in the phone. If a match is found, the phone gets unlocked. This feature enhances security, provides quick access, and reduces the need for passwords or PINs.

16. With reference to data processing, expand the term TFIDF. Also give any two applications of TFIDF.

Ans: **TF-IDF** stands for Term Frequency - Inverse Document Frequency.

It is a data processing technique used to measure how important a word is in a document compared to a collection of documents.

Applications of TF-IDF:

- (i) Used in search engines to rank relevant web pages
(ii) Used in text classification and document similarity analysis

Answer any 3 out of the given 5 questions (4X3=12 marks) Answer each question in 50 – 80 words.

17. Ms. Sooji is a beginner in the field of Artificial Intelligence. She got confused among the core terms like Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning (DL). Many a times, these terms are used interchangeably but are they the same? Justify your answer. Help her in understanding these terms by drawing a well labelled diagram to depict the interconnection of these three fields.

Ans: Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL) are related, but they are not the same.

Artificial Intelligence (AI) is the broad concept of making machines act like humans by thinking, learning, and solving problems.

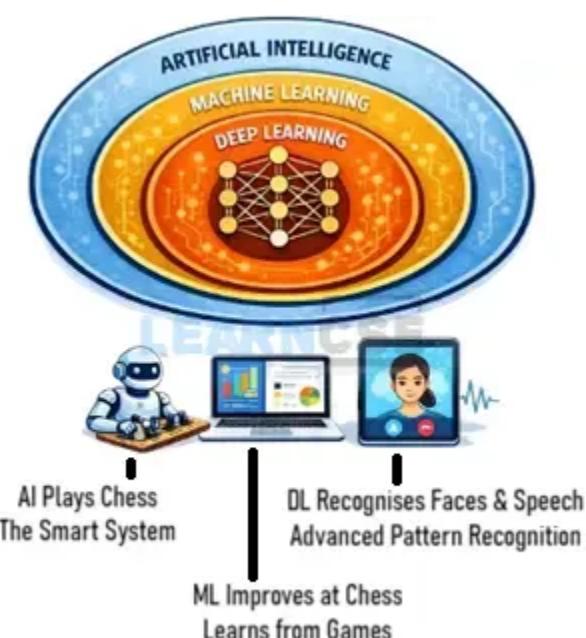


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Machine Learning (ML) is a subset of AI that allows machines to learn from data and improve performance without being explicitly programmed.

Deep Learning (DL) is a subset of ML that uses neural networks with many layers to learn from large amounts of data and perform complex tasks.

So, all Deep Learning is Machine Learning, all Machine Learning is Artificial Intelligence, but not all AI is ML or DL.



18. What is the significance of AI project cycle? Also explain in detail about how Data Acquisition is different from data exploration.

Ans: **Significance of the AI Project Cycle**

The AI Project Cycle is important because it provides a systematic step-by-step approach to solve real-life problems using Artificial Intelligence. It helps in understanding the problem clearly, collecting the right data, building effective models, and evaluating results properly. By following this cycle, AI solutions become more accurate, reliable, and efficient, and errors due to poor planning or wrong data are reduced.

Difference between Data Acquisition and Data Exploration

Data Acquisition means collecting data. In this step, data is gathered from different sources such as surveys, sensors, websites, or records. The data collected may be raw and not organized.

Data Acquisition = Getting the data

Data Exploration means understanding the data. In this step, the collected data is studied to find patterns, errors, missing values, and useful information. Charts and simple analysis are used to understand the data better.

Data Exploration = Studying and understanding the data

19. Create a document vector table from the following documents by implementing all the four steps of Bag of words model. Also depict the outcome of each step.

Document 1: Sameera and Sanya are classmates.

Document 2: Sameera likes dancing but Sanya loves to study mathematics.

Ans: **Step 1: Text Preprocessing**

- Doc 1: sameera and sanya are classmates
- Doc 2: sameera likes dancing but sanya loves to study mathematics

Step 2: Tokenization (split into words)

- Doc 1: sameera, and, sanya, are, classmates
- Doc 2: sameera, likes, dancing, but, sanya, loves, to, study, mathematics

Step 3: Create Vocabulary (unique words)

- sameera, and, sanya, are, classmates, likes, dancing, but, loves, to, study, mathematics (Total = 12 words)

Words ↓ / Docs →	Doc 1	Doc 2
sameera	1	1
and	1	0
sanya	1	1
are	1	0
classmates	1	0
likes	0	1
dancing	0	1
but	0	1
loves	0	1
to	0	1
study	0	1
mathematics	0	1

Bag of Words (BoW) Representation / Final Outcome:

- Document 1 → [1,1,1,1,0,0,0,0,0]
- Document 2 → [1,0,1,0,0,1,1,1,1,1]

20. Will it be valid to say that not all the devices which are termed as “smart” are AI-enabled?

Justify this statement. Explain any two examples from the daily life which are commonly misunderstood as AI.

Ans: Yes, it is valid to say that not all devices called “smart” are AI-enabled.

Many smart devices work on predefined rules and simple automation, not on Artificial Intelligence. AI-enabled devices can learn from data, make decisions, and improve over time, while non-AI smart devices only follow instructions given by humans.

A device is called smart if it can perform tasks automatically or electronically. However, AI is required only when the device can think, learn, or adapt. If there is no learning or decision-making, it is not AI,



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even if it is smart.

Examples commonly misunderstood as AI

(i) **Automatic washing machine** - It is often called smart, but it only follows fixed programs like wash, rinse, and spin. It does not learn user habits or make intelligent decisions.

(ii) **Calculator** - A calculator gives fast and accurate answers, but it only performs calculations based on input commands. It does not learn or think, so it is not AI.

21. Recently the country was shaken up by a series of earthquakes which has done a huge damage to the people as well as the infrastructure. To address this issue, an AI model has been created which can predict if there is a chance of earthquake or not. The confusion matrix for the same is:

Confusion Matrix		Reality	
		Yes	No
Predicted	Yes	50	05
	No	25	20

(i) How many total cases are True Negative in the above scenario?

Ans: 20

(ii) Calculate precision, recall and F1 score.

Ans: Precision = $TP / (TP + FP)$

$$= 50 / (50 + 5)$$

$$= 50 / 55$$

$$\approx 0.91$$

Recall = $TP / (TP + FN)$

$$= 50 / (50 + 25)$$

$$= 50 / 75$$

$$\approx 0.67$$

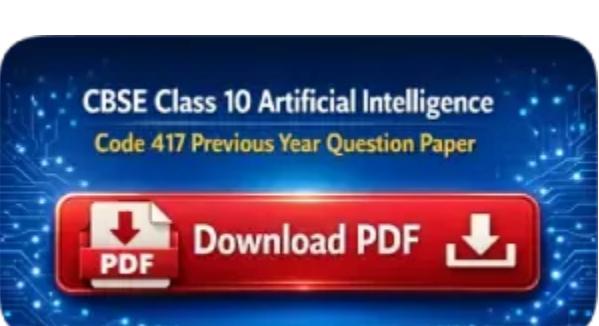
F1 Score = $2 \times (\text{Precision} \times \text{Recall}) / (\text{Precision} + \text{Recall})$

$$= 2 \times (0.91 \times 0.67) / (0.91 + 0.67)$$

$$\approx 1.22 / 1.58$$

$$\approx 0.77$$

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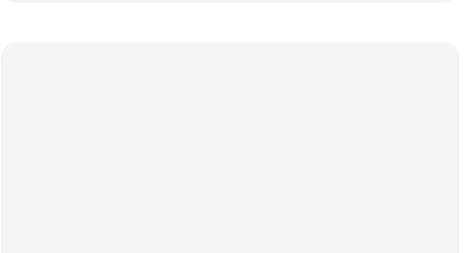
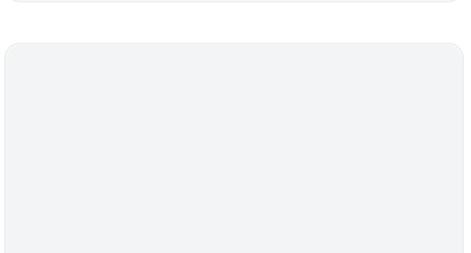
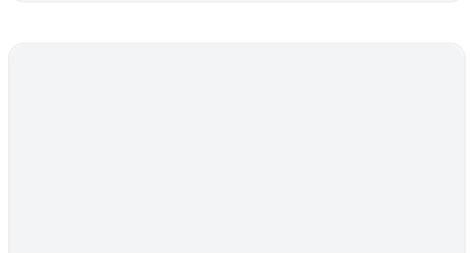
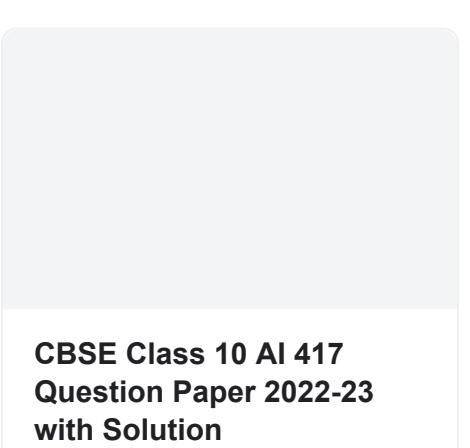
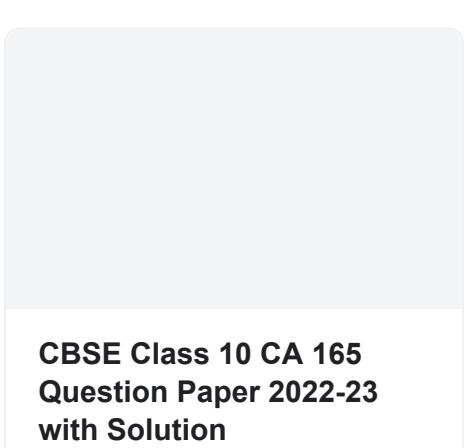
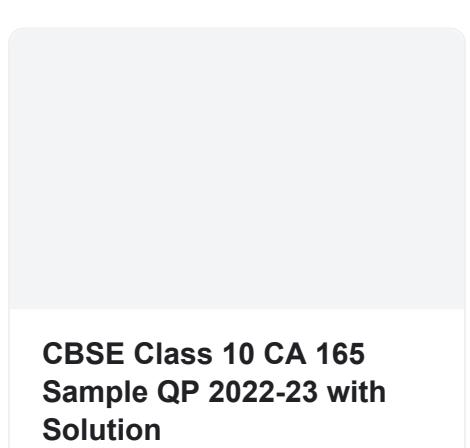
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