School: Om Public School

Class: **X**

Name: **PT - II**

Subject: **A.I.(417)**

Time: **2 hour**

Total Marks: 40

Multiple choice questions

A.   Multiple choice questions

1. Which ethical framework emphasises good character traits such as kindness and compassion?

    [Marks: 1]

    i. Value-based ethical framework

    ii. Virtue-based ethical framework

    iii. Rights-based ethical framework

    iv. Utility-based ethical framework

2. Which of the following is true about a confusion matrix?

    [Marks: 1]

    i. The confusion matrix shows only the correct predictions of a model.

    ii. The diagonal elements of a confusion matrix represent the false positives and false negatives.

    iii. The confusion matrix can be used to calculate accuracy, precision, recall, and F1 score.

    iv. The confusion matrix is used only for regression problems.

3. Which of the following is NOT a sub-category of supervised learning?

    [Marks: 1]

    i. Classification

    ii. Regression

    iii. Clustering

    iv. Predictive Modelling

4. Which of the following is not a typical stage in the AI Project Cycle?

    i. Modelling

    ii. Data exploration

    iii. Deployment

    iv. Data generation

5. Which of the following describes an overfitting scenario in model evaluation?

    i. The model performs poorly on both training and test data.

    ii. The model performs well on both training and test data.

    iii. The model performs well on training data but poorly on test data.

    iv. The model performs poorly only on test data but memorizes random noise from training data.

6. Which evaluation technique involves dividing the dataset into training and testing subsets?

    i. Precision

    ii. Gradient Boosting

    iii. Train-test split

    iv. Recall

7. What is the primary domain of application for Bioethics?

    i. Agriculture

    ii. Healthcare and life sciences

    iii. Information technology

    iv. Environmental conservation

8. Which of the following activities help to conserve the environment? [Marks: 1]

    i. Organic farming

    ii. Vermi-composting

    iii. Rainwater harvesting

    iv. All of these

9. What is True Positive (TP) in the confusion matrix? [Marks: 1]

    i. When the model predicts a negative value correctly

    ii. When the model predicts a negative value incorrectly

    iii. When the model predicts a positive value incorrectly

    iv. When the model predicts a positive value correctly

10. What is the main goal of Computer Vision projects? [Marks: 1]

    i. Translating audio data into visual descriptions

    ii. Converting digital data into analogue signals

    iii. Teaching machines to understand textual information

    iv. Converting digital visual data into computer-readable language

Fill in the blanks

B. Fill in the blanks

1. The F1-Score is calculated as the harmonic mean of …………….................. and ……………................. . [Marks: 1]

2. An …………….................. in its training phase is capable of learning by recognising patterns in data which is later used to generate the desired output. [Marks: 1]

3. The target variable in a confusion matrix has two values Positive and ……………………….. [Marks: 1]

4. ……………….……… is an example of affordable and clean energy. [Marks: 1]

5. The confusion matrix consists of 4 different combinations: True Positive (TP), True Negative (TN), False Positive (FP), and ……………...............

Short answer type questions

C.   Short answer type questions

1. Name any four real-world applications of Neural Network.

[Marks: 2]

_____

2. The Face Lock feature in smartphones is an application of Artificial Intelligence. Explain how this feature works and identify the AI domain it belongs to.

[Marks: 2]

_____

3. Name any five SDGs.

[Marks: 2]

_____

4. What is Organic Farming?

[Marks: 2]

_____

Write True or False

D.   Write True or False

1. The data that is used to predict the model is called testing data.

[Marks: 1]

    (i) True

    (ii) False

2. An ……….……............... in its training phase is capable of learning by recognising patterns in data which is later used to generate the desired output. [Marks: 1]

    (i) True

    (ii) False

3. AI can fully replicate the complexity of the human brain. [Marks: 1]

    (i) True

    (ii) False

4. The F1 Score is the harmonic mean of Precision and Recall. [Marks: 1]

    (i) True

    (ii) False

5. Predictive models, which are built from historical …………………….., can be used in various fields such as weather forecasting, healthcare, finance, and more. [Marks: 1]

    (i) True

    (ii) False

Long answer type questions

E.   Long answer type questions

1. Explain the term clustering. Give an example. [Marks: 3]

_____

2. Samarth attended a workshop on Artificial Intelligence but found the technical jargon challenging. He understood that AI is used in various everyday applications, but struggled to identify its core areas. Can you help Samarth list the three main domains of AI? [Marks: 3]

_____

3. Which metric is more important—Recall or Precision? Explain in detail.

[Marks: 3]

_____

4. List down the types of Ethical Frameworks.

[Marks: 3]

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