

PRACTICE PAPER 2
CLASS IX
ARTIFICIAL INTELLIGENCE (CODE 417)
(SOLUTIONS)

1.
 - (i) Stress Management
 - (ii) (c) YouTube
 - (iii) (c) A is true but R is false.
 - (iv) (a) Oxygen is necessary for human respiration.
 - (v) (c) Starting a new business venture
 - (vi) (c) Temperature
2.
 - (i) (c) A is true but R is false.
 - (ii) (b) Data Privacy
 - (iii) (c) Statement 1 is correct but Statement 2 is incorrect.
 - (iv) Problem Scoping
 - (v) (b) A model whose internal workings are not fully understood
 - (vi) average
3.
 - (i) (c) Data
 - (ii) (b) The set of all possible outcomes
 - (iii) (b) It is a branch of Computer Science that focuses on creating systems that are capable of performing tasks that typically require human intelligence.
 - (iv) (b) To execute a sequence of Python commands from a file
 - (v) (c) Building Physical Databases
 - (vi) (d) All of these
4.
 - (i) (d) All of these
 - (ii) (a) Both Statement 1 and Statement 2 are correct.
 - (iii) (c) Tuple
 - (iv) (d) All of these
 - (v) outlier
 - (vi) Supervised Learning trains models to associate inputs with correct outputs.
5.
 - (i) (a) Gathering information to train the AI model
 - (ii) (b) Online Search
 - (iii) (b) Government databases and repositories
 - (iv) (c) Programming
 - (v) (b) Augmentation
 - (vi) 1/3
6. The important components of green economy are:
 - (a) Renewable energy
 - (b) Green building and green transportation
 - (c) Waste management
 - (d) Land management
 - (e) Water management
7. **Corporate Ownership:** It is a separate legal entity offering limited liability and capital-raising ability. Its types include Corporation, Limited Liability Corporation.
Non-Corporate Ownership: It is a structure where owners are personally liable and is often simple to establish. Its types include Sole Proprietorship, Partnership.

8. The different components that make up an email are as follows:
- (a) **Headers:** Include Subject, Sender, etc.
 - (b) **Cc and Bcc:** Used for multiple recipients.
 - (c) **Body:** Main content of the email.
 - (d) **Attachments:** Files or documents sent with the email.
 - (e) **Recipient Address:** Email ID of the receiver.
9. Some challenges of verbal communication are as follows:
- (a) Misunderstandings due to language, accents or interpretation differences.
 - (b) Emotional influences, such as anger or nervousness, affect clarity.
 - (c) Lack of record makes documentation of discussions difficult.
10. The following can help manage stress effectively:
- (a) **Time Management:** Prioritize tasks and create schedules.
 - (b) **Relaxation Techniques:** Practise meditation or deep breathing.
 - (c) **Physical Activity:** Regular exercise reduces stress levels.
11. In Machine Learning, 'Classification' is a supervised learning method that is used to group data into predefined categories, e.g., spam detection (Spam/Not Spam) or disease diagnosis (Positive/Negative).
12. Operations that can be performed on lists in Python are as follows:
- (a) **Adding Elements:** Using append() or insert().
 - (b) **Removing Elements:** Using remove() or pop().
 - (c) **Slicing:** Accessing a range of elements.
13. Data can be categorized based on the type of application it is used for in the following ways:
- (a) **Primary Data:** It is collected directly from original sources for a specific purpose. Examples include operational data and transactional data.
 - (b) **Secondary Data:** It is collected for a different purpose but used for analysis or other applications. Examples include analytical data and master data.
- 14.
- | Descriptive Statistics | Inferential Statistics |
|--|--|
| Describes the properties of data | Makes inferences based on data |
| Usually presented as charts or graphs | Usually presented as probabilities |
| Provides information about available data only | Can make predictions about unavailable data by using probability |
15. Some negative impacts of Generative AI include:
- (a) **Job Displacement:** Automation reduces demand for human labour.
 - (b) **Data Privacy Concerns:** Potential misuse of sensitive data.
 - (c) **AI Bias:** Leads to unfair or discriminatory decisions.
16. Confusion Matrix represents the relationship between actual and predicted outcomes, highlighting true and false classifications for both positive and negative cases.

Actual/Predicted	Predicted Positive	Predicted Negative
Actual Positive	350	50
Actual Negative	30	150

17. Problem **scoping** is crucial in AI projects for the following reasons:
- (a) **Clarifies Goals:** It defines the problem, ensuring a focused and clear project direction.
 - (b) **Resource Allocation:** Helps determine the necessary resources and data required.
 - (c) **Feasibility Assessment:** Identifies any challenges or limitations early, avoiding wasted effort.
 - (d) **Sets Expectations:** Aligns stakeholders' expectations regarding outcomes and timelines.
 - (e) **Improves Efficiency:** Provides a road map, ensuring that efforts are directed towards solving the right problem.

By scoping her problem clearly, Alisha can efficiently plan her project and ensure its success.

18. Python is the first choice for AI developers due to the following reasons:
- (a) **Simplicity and Readability:** Python's syntax is clean and easy to learn, making it accessible for developers at all levels.
 - (b) **Extensive Libraries:** It has powerful libraries like TensorFlow, Keras, PyTorch and scikit-learn, specifically designed for AI and Machine Learning.
 - (c) **Community Support:** Python has a large, active community, providing resources, tutorials and continuous development.
 - (d) **Versatility:** It supports various AI-related tasks like data analysis, neural networks and natural language processing.
 - (e) **Integration:** Python easily integrates with other languages and technologies, enhancing its flexibility for AI applications.
19. (a) **Object Detection:** It is the AI domain that is focused on identifying and locating objects within an image or video. It involves analyzing visual data to detect various objects such as people, cars or animals and labelling them.
- (b) **Generative AI Chatbot:** Generative AI chatbot refers to a system that uses AI techniques such as NLP and Machine Learning to generate human-like responses in conversation. It can create responses based on input data and simulate human interaction.
20. A Problem Statement Template helps define the core issue of an AI project by organizing key information into a clear structure. Its components are:
- (a) **Who:** Identifies the stakeholders facing the problem.
 - (b) **What:** Describes the issue or need.
 - (c) **Where:** Outlines the context or situation where the problem occurs.
 - (d) **Why:** Explains the ideal solution's benefit to the stakeholders.

Using this template helps ensure clarity, focus and alignment with project goals. It aids in effective problem-solving and decision-making, allowing the classmate to structure their project around a well-defined problem.

21. A confusion matrix is used to evaluate the performance of a classification model by comparing predicted labels with actual labels. Based on the results, the confusion matrix is:

	Predicted Spam	Predicted Not Spam
Actual Spam	350	50
Actual Not Spam	50	550

- **True Positives (TP):** 350 (Spam correctly predicted as Spam)
- **True Negatives (TN):** 550 (Not Spam correctly predicted as Not Spam)
- **False Positives (FP):** 50 (Not Spam incorrectly predicted as Spam)
- **False Negatives (FN):** 50 (Spam incorrectly predicted as Not Spam)