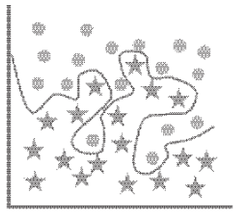
PRACTICE PAPER-2
CLASS X
ARTIFICIAL INTELLIGENCE (CODE 417)
(SOLUTIONS)

1. (i) Self-awareness (ii) (b) Managing hardware
(iii) (c) A is true but R is false. (iv) (c) SDG 14
(v) (c) It delivers clear, detailed information and suggestions.
(vi) (d) Multitasking excessively

2. (i) (a) Both A and R are true and R is the correct explanation for A.
(ii) (c) Problem Avoidance
(iii) (a) Both Statement 1 and Statement 2 are correct.
(iv) (c) 
(v) (b) False Negative
(vi) (b) Fashion sense

3. (i) (a) The smallest unit of information (ii) (c) False Positive
(iii) (c) Image Classification (iv) (c) Identification of stakeholders
(v) Nominal (vi) (a) Ability to learn and adapt

4. (i) Low
(ii) (d) Statement 2 is correct but Statement 1 is incorrect.
(iii) (a) Black
(iv) (a) To increase computational efficiency by reducing the dataset size
(v) (b) JSON files
(vi) (c) Problem Scoping

5. (i) (c) Ordinal
(ii) Input layer
(iii) (c) Identifies individual objects in an image
(iv) (a) Meaningful word is found
(v) Deep Learning
(vi) (c) Time of birth

6. Green consumers promote environmental sustainability by choosing eco-friendly products, reducing waste, recycling, and conserving resources. Examples include using reusable bags, buying energy-efficient appliances and supporting sustainable brands.

7. Phrases enhance sentence clarity and depth, adding details or focus. Noun phrases define subjects, verb phrases convey actions and prepositional phrases provide context, shaping sentence structure and meaning. For example, 'The large, old house' (noun phrase) specifies the subject while 'is slowly crumbling' (verb phrase) conveys action and state effectively.

8. For someone balancing work and personal life, effective stress management techniques include exercise, meditation, relaxation techniques, time management, setting boundaries and seeking social support. Such techniques help relieve stress and improve focus.

9. Android is more customizable while iOS offers a user-friendly interface. Factors influencing a user's preference include app availability, budget and compatibility with their existing ecosystem.

10. Myths like 'need a revolutionary idea' and 'entrepreneurship is only for young people' can discourage individuals. Educating individuals about the importance of entrepreneurial skills and dedication tackles these myths and inspires people to pursue entrepreneurship.

11. Machine learning enables autonomous vehicles, virtual assistants and computer vision (CV) systems to analyze data and make decisions. Natural language processing interprets user commands while CV processes visual information, helping solve complex problems like navigation and context-aware communication.

12. Ananya should use supervised learning, specifically a classification model like CNN, as it learns from labelled data to recognize patterns.

13. 'What problem am I solving?' and 'Who will benefit?' are two key questions that Riya should ask. These define scope and align objectives with user needs.

14. Essential stop words like 'the' and 'over' must be retained as they maintain grammatical structure, *i.e.*, removing them distorts meaning and clarity.

15. Image classification refers to assigning a label to an image (*e.g.*, 'cat', 'dog', 'landscape') while localization is identifying the location and boundaries of objects within an image.

16.

	Predicted Positive	**Predicted Negative**
Actual Positive	75	100
Actual Negative	25	50

17. Artificial Intelligence is the simulation of human intelligence in machines. It is like teaching a computer to think and learn on its own. It uses data to identify patterns and make decisions, like how we learn to ride a bike by practising and observing. For example, Siri and Alexa use AI to understand voice commands and respond accordingly.

18. 4W Problem Canvas helps structure thinking around the problem:

(i) **Who:** Who is affected by the problem?

(ii) **What:** What exactly is the problem?

(iii) **Where:** Where does the problem occur?

(iv) **Why:** Why is this problem important to solve?

By answering these questions, Ria can gain a deeper understanding of the problem and formulate a clear and focused project goal.

19. (A) Script-based Chatbot

(B) Smart Chatbot

Script-based chatbots operate on predefined rules and scripts, offering limited and predictable responses. They often rely on keywords to trigger specific responses. In contrast, smart chatbots leverage AI and NLP to understand and respond to user input more naturally. They can process natural language, learn from interactions and adapt their responses, engaging in more human-like conversations and providing a more dynamic and engaging user experience.

Example: Alexa is a smart chatbot whereas basic FAQ bots are script-based chatbots.

20. Discovering hidden patterns in data is like finding secret connections within a large dataset. It involves techniques like grouping similar data points, iden tifying relationships between different pieces of information and using these patterns to make predictions or decisions. For example, online stores use your past purchases to recommend products you might like. This is done by analyzing your buying behaviour and identifying patterns in your preferences.

21. (i) **Correct Predictions:** 45 (TP) + 65 (TN) = 110

(ii) **Precision:** 45 / (45 + 15) = 0.75

Recall: 45 / (45 + 25) = 0.64

F1 Score: 2 * (0.75 * 0.64) / (0.75 + 0.64) = 0.69