PRACTICE PAPER-1
CLASS XII
ARTIFICIAL INTELLIGENCE

Time: 2 Hours   **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):**
   (a) This section has 5 questions.
   (b) Marks allotted are mentioned against each question/part.
   (c) There is no negative marking.
   (d) Do as per the instructions given.
7. **SECTION B—SUBJECTIVE TYPE QUESTIONS (26 MARKS):**
   (a) This section has 16 questions.
   (b) A candidate has to do 10 questions.
   (c) Do as per the instructions given.
   (d) 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.**   **4 x 1 = 4**

   (i) During a group discussion, Dhanur is explaining his perspective on a project idea. Tara listens quietly but keeps glancing out of the window and misses some important details. When it's her turn to speak, she gives an unrelated answer. [1]

   If Tara wanted to follow the **R** of **RESPECT**, what should she do?

   (a) Wait for her turn to speak without paying much attention.

   (b) Focus her attention fully on Dhanur and listen carefully to understand his message.

   (c) Write her own ideas while Dhanur is talking.

   (d) Think about how to prove Dhanur wrong while he speaks.

   (ii) _____ is a trait in which one reflects self-discipline, reliability and responsibility in actions and behaviour. [1]

   (iii) Match the following skills with the correct descriptions:

Skills	Description
1. Self-Awareness	(a) To be able to prioritize tasks, set realistic goals and allocate time for rest to prevent burnout
2. Emotion Regulation	(b) To be aware of your strengths and make the best out of them
3. Noise Reduction	(c) To manage one's feelings and stay calm even in difficult situations.

   (a) 1-c,   2-b,   3-a

   (b) 1-b,   2-a,   3-c

   (c) 1-a,   2-b,   3-c

   (d) 1-b,   2-c,   3-a

(iv) What is the effect of changing the layout of an existing slide in a presentation? [1]
- (a) The arrangement and placeholders for content on the slide change but the content remains.
- (b) The text formatting (font, size, colour) automatically resets to default.
- (c) A new slide is created with selected layout.
- (d) The title of the slide is automatically centred regardless of the layout chosen.

(v) **Assertion (A):** Successful entrepreneurs are willing to take calculated risks to achieve their goals. [1]

Reason (R): Entrepreneurs make decisions blindly without analyzing possible outcomes.
- (a) Both A and R are correct and R is the correct explanation of A.
- (b) Both A and R are correct but R is not the correct explanation of A.
- (c) A is correct but R is incorrect.
- (d) A is incorrect but R is correct.

(vi) Appropriate technology is characterized by large-scale, high-cost solutions designed for industrial applications. *(State whether this is True or False.)* [1]

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

(i) Match the correct questions from Column A to the correct step of the Data Science Methodology in Column B. [1]

Column A	Column B
1. Which predictive algorithm will provide the most accurate forecast?	(a) Evaluation
2. How is the dataset divided to test the model's performance?	(b) Modelling
3. What information do we need to understand patterns and relationships in data?	(c) Data Understanding
4. How can we verify that the model performs well on unseen data?	(d) Train-Test Split

- (a) 1-d, 2-b, 3-a 4-c
- (b) 1-b, 2-d, 3-c 4-a
- (c) 1-a, 2-b, 3-d 4-c
- (d) 1-d, 2-c, 3-a 4-b

(ii)

The given image shows the working of a vision-based system that identifies the person using the face. What is the other name of this technology?. [1]

(iii) Which stage in the Big Data Analytics process involves presenting insights through dashboards and graphs for quick interpretation? [1]
- (a) Data Acquisition
- (b) Data Cleaning
- (c) Analysis
- (d) Visualization

(iv) The fundamental building block of a neural network that takes in inputs, processes them, and produces an output is called a _____. [1]

(v)

What will come in place of '1' and '2'? [1]

(vi) Which element of Freytag's Pyramid is primarily concerned with discussing the consequences and potential impact of the key insight discovered in the climax? [1]
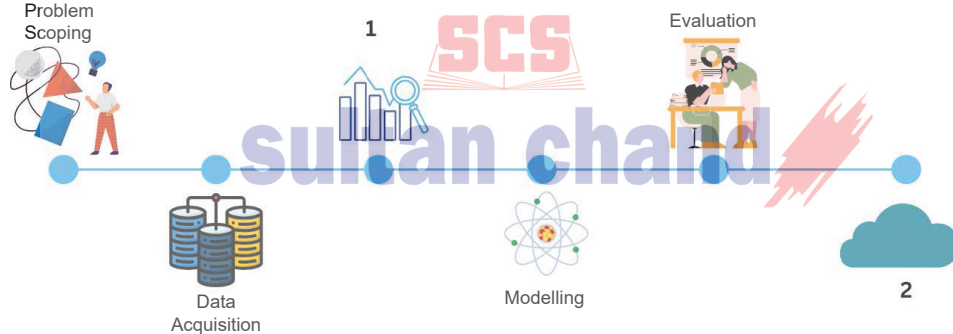
(a) Dénouement   (b) Resolution   (c) Rising Action   (d) Falling Action

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

(i) _____ is the is the stage that verifies the overall performance of a model and its fitness for deployment. [1]

(ii) [1]

What will come in place of '1' and '2'?

(a) Communication, Data Preparation   (b) Deployment, Documentation

(c) Data Preparation, Deployment   (d) Deployment, Data Preparation

(iii) Match the image processing technique in Column A with its correct description in Column B. [1]

Column A	Column B
1. Edge Detection	(a) Finds the point where two or more edges meet.
2. Shape Detection	(b) Focuses on identifying geometric structures within an image, such as lines or circles.
3. Noise Reduction	(c) Adjusting the dimension of the image without changing the internal content.
4. Resizing	(d) Refers to unwanted distortions or variations in pixel value that reduce image quality.

(a) 1-d,   2-b,   3-a   4-c

(b) 1-d,   2-c,   3-b   4-a

(c) 1-a,   2-b,   3-d   4-c

(d) 1-d,   2-c,   3-a   4-b

(iv) Big Data is often described as using several characteristics known as the 7Vs. Which of the following is **NOT** considered one of the main 7Vs of Big Data? [1]

(a) Volume   (b) Velocity   (c) Variety   (d) Validation

(v) Identify the **odd one out** from the following types of neural network: [1]

(a) Feed Forward   (b) Generative Adversarial Network

(c) Convolutional Network   (d) Descriptive AI

(vi) Refer to the diagram that illustrates the five stages of a story arc — Exposition, Rising Action, (?), Falling Action and Resolution. What term should replace the question mark (?)? [1]
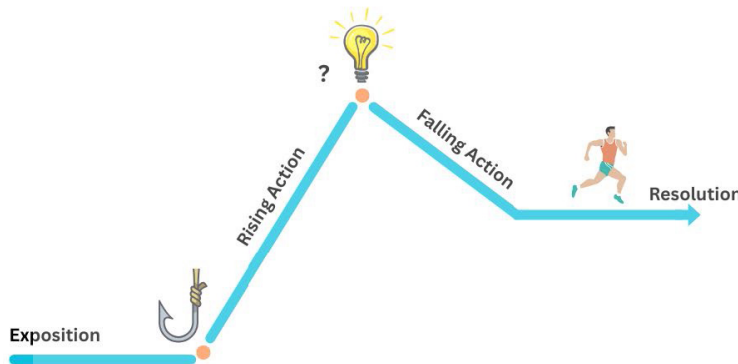
4. **Answer** any 5 out of the given 6 questions.   **5 x 1 = 5**

(i) **Assertion (A):** The Cross-Validation (k-Way Split) strategy is particularly useful when the amount of available data is limited. [1]

    Reason (R): By partitioning the data into 'k' folds and using each fold for validation once, this method maximizes the utilization of available samples for both training and validation.

(a) Both A and R are correct and R is the correct explanation of A.

(b) Both A and R are correct but R is not the correct explanation of A.

(c) A is correct but R is incorrect.

(d) A is incorrect but R is correct.

(ii) [1]
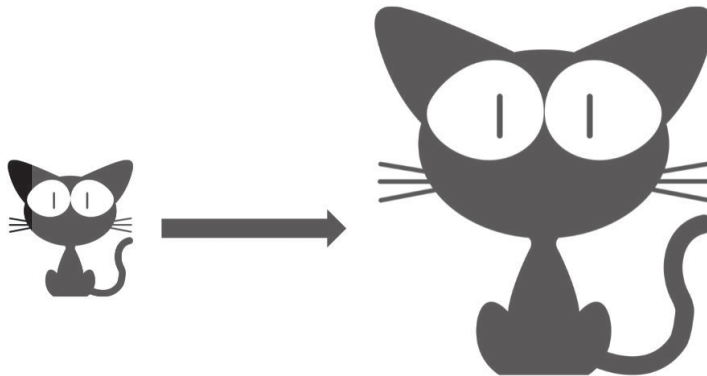
When a computer changes the dimensions of an image to make it smaller or larger without altering its content, the process is called _____.

(iii) Which technology in big data analytics has led to easy scaling up or down of computing resources without the need for extensive IT infrastructure? [1]

(a) Parallel Processing   (b) Edge Computing

(c) Cloud Computing   (d) Social Networking

(iv) Which component allows a neuron to better fit the data by shifting the activation threshold, enabling it to make decisions even when all inputs are zero? [1]

(a) Weight   (b) Bias

(c) Output   (d) Axon

(v) Name any two layers that are unique to the Convolution Neural Network. [1]

(vi) Match the type of Generative AI application to the correct AI tool. [1]

AI Tool	Application Type
1. DALL·E 3	(a) Video Generation
2. Gemini	(b) Image Generation
3. Google Lumiere	(c) Text Generation
4. Google Music LM	(d) Music Generation

(a) 1-d, 2-b, 3-a 4-c
(b) 1-b, 2-c, 3-a 4-d
(c) 1-a, 2-b, 3-d 4-c
(d) 1-c, 2-d, 3-b 4-b

**5. Answer any 5 out of the given 6 questions.** **5 x 1 = 5**

(i) Problem Understanding is the first stage of the data science methodology, which clearly defines the issue to be addressed. *(State whether this is True or False.)* [1]

(ii) **Assertion (A):** Traditional feature extraction methods, like edge and shape detection, require manual engineering and rely on predefined mathematical models. [1]

Reason (R): Modern feature extraction methods, such as Convolutional Neural Networks (CNNs), automatically learn a hierarchy of features directly from the image data.

(a) Both A and R are correct and R is the correct explanation of A.
(b) Both A and R are correct but R is not the correct explanation of A.
(c) A is correct but R is incorrect.
(d) A is incorrect but R is correct.

(iii)
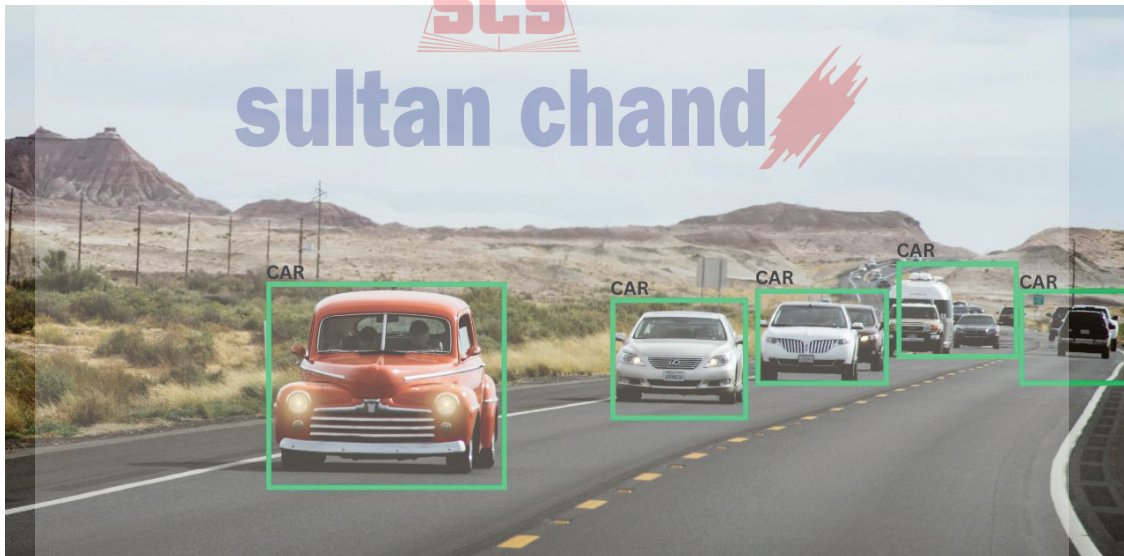
The image shows bounding boxes and labels for multiple cars. Which computer vision task does this represent? [1]

(a) Image Classification (b) Object Detection
(c) Instance Segmentation (d) Semantic Segmentation

(iv) Match the type of neural network in Column A with its corresponding task in Column B. [1]

Column A	Column B
1. Feed Forward Neural Network	(a) Enhancing low-resolution images
2. Generative Adversarial Network	(b) Span detection on email
3. Recurrent Neural Network	(c) Language translation

(a) 1-c, 2-b, 3-a

(b) 1-b, 2-a, 3-c

(c) 1-a, 2-b, 3-c

(d) 1-b, 2-c, 3-a

(v) LLMs generate text by predicting the next word based on the words already generated, a technique known as_____ generation. [1]

(vi) Which part of Freytag's Pyramid synthesizes the problem by stating that 'systemic barriers' are the core issue, rather than a lack of student interest? [1]

(a) Rising Action   (b) Climax

(c) Falling Action   (d) Resolution

SECTION B—SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills.   **3 x 2 = 6**

Answer each question in 20–30 words.

6. The words 'Ouch!', 'Wow!', 'Hurray!' and 'Ugh!' are examples of which part of speech? Explain their function in communication. [2]

7. Write two steps a person can take to manage stress effectively. [2]

8. In LibreOffice Impress, you can choose how elements like titles, text boxes and images are arranged on a slide. [2]

(a) Name this feature of LibreOffice Impress.

(b) From which option or menu can you change this feature?

9. Identify the type of attitude the following entrepreneurs are demonstrating: [2]

(a) Ravi noticed that sales of his mobile accessory shop were dropping because of new competitors. After analyzing the situation, he quickly decided to launch an online store to reach more customers and adapt to market trends.

(b) Aisha started a small organic skincare business. In the beginning, she faced repeated product failures and financial setbacks, but she kept experimenting with natural ingredients and improving her formula until her products finally succeeded.

10. What is precision agriculture? How does it help farmers in improving their efficiency and productivity? [2]

Answer any 4 out of the given 6 questions in 20–30 words each.   **4 x 2 = 8**

11. What is the Design Thinking Framework? How many steps are there in it? [2]

12. Computer vision technologies are increasingly used in areas like surveillance, healthcare and autonomous systems. Explain any two ethical challenges related to computer vision. [2]

13. Differentiate between Structured Data and Semi-Structured Data. [2]

14. Consider the following perceptron that predicts whether or not the player should play with inputs, weights and bias of 2. Calculate Output/Predicted outcome (ŷ) for the given scenario. [2]

| Factor	Input	Weight
Performance	9	3
Fatigue	4	-2
Injury	0	-6

15. What differentiates generative AI from deep learning? [2]

16. Explain any two steps in Freytag's Pyramid. [2]

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

17. K-Fold Cross-Validation is a reliable technique for evaluating models, especially when working with small datasets. Draw a diagram representing the 5-Fold Cross-Validation process, and explain how cross-validation differs from a simple Train–Test split. [4]

18. A smart city project collects and analyzes data from various sources to improve city services and infrastructure. Identify the characteristics of Big Data represented in the following scenarios and explain them in detail: [4]

   (a) Thousands of IoT sensors across the city continuously record data on traffic, air quality and electricity usage every second.

   (b) The city's central data centre stores massive amounts of data generated daily from multiple departments and systems.

   (c) The collected data includes structured (sensor readings), semi-structured (JSON from mobile apps) and unstructured (CCTV footage, social media posts) formats.

   (d) Data engineers regularly clean and validate the collected data to remove noise, errors and irrelevant information before analysis.

19. Explain why neural networks are considered a 'foundational concept' of modern AI. [4]

20. Draw and explain a comparative diagram illustrating the fundamental difference between Discriminative AI and Generative AI. [4]

21.
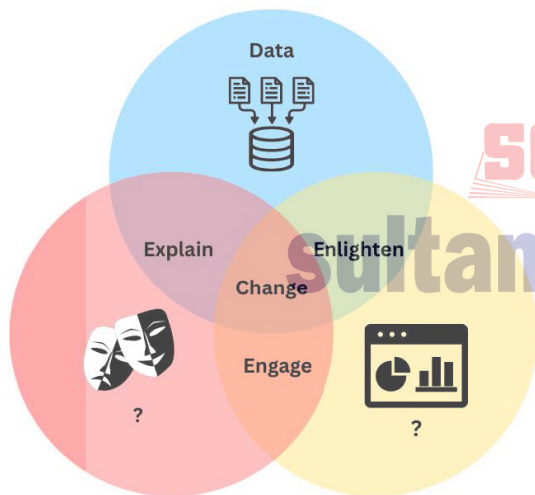
Trinity of Data Storytelling

The diagram illustrates the key components of data storytelling. Data is at the core of any data story. Identify and explain all the essential elements in the diagram.