PRACTICE PAPER-3
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 team meeting, Priya keeps talking over others to make her point. When Rahul tries to share his opinion, she interrupts before he completes his sentence. The team starts feeling frustrated because no one else gets a chance to speak. [1]

If Priya wanted to follow the **T** of **RESPECT**, what should she do?

(a) Continue speaking until everyone agrees with her point.

(b) Wait patiently for her turn and allow others to express their views before responding.

(c) Stay silent throughout the meeting to avoid arguments.

(d) Interrupt others whenever she feels her idea is more important.

(ii) _____ is a trait wherein one is highly sociable, talkative and enjoys being around others. [1]

(iii) Match the following personality traits with their correct descriptions. [1]

Personality Trait	Description
1. Neuroticism	(a) They are kind and show empathy and warmth in their interaction with others.
2. Agreeableness	(b) They are responsible, self-disciplined and reliable.
3. Conscientiousness	(c) They are emotionally unstable and experience negative emotions such as anxiety.

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

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

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

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

(iv) Which of the following is a method for inserting an image into a LibreOffice Impress slide? [1]

(a) Using the 'Slide Show' menu.

(b) Applying a new slide layout.

(c) Using the 'Insert Image' icon on the Standard toolbar.

(d) Using the 'Transitions' pane.

(v) **Assertion (A):** Creativity helps entrepreneurs identify unique business opportunities and solve problems innovatively. [1]

Reason (R): Entrepreneurs only rely on existing ideas and avoid trying new approaches.

(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) Green jobs in agriculture, such as precision agriculture, incorporate technologies like drones, GPS and sensors to optimize resource use. *(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. How will the finished model be integrated into the software?	(a) Design Thinking Framework
2. What approach can help in creatively identifying user needs and solutions?	(b) Problem Scoping
3. How do we measure how well the model performs on test data?	(c) Accuracy
4. How do we analyze the problem of the stakeholder?	(d) Deployment

(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-a, 3-c 4-b

(ii) 

The given image shows the working of a vision-based system that identifies objects in an images. What is the other name of this technology?. [1]

(iii) Which global trend enabled the processing of massive datasets by providing an exponential increase in computing power? [1]

(a) Cloud Computing

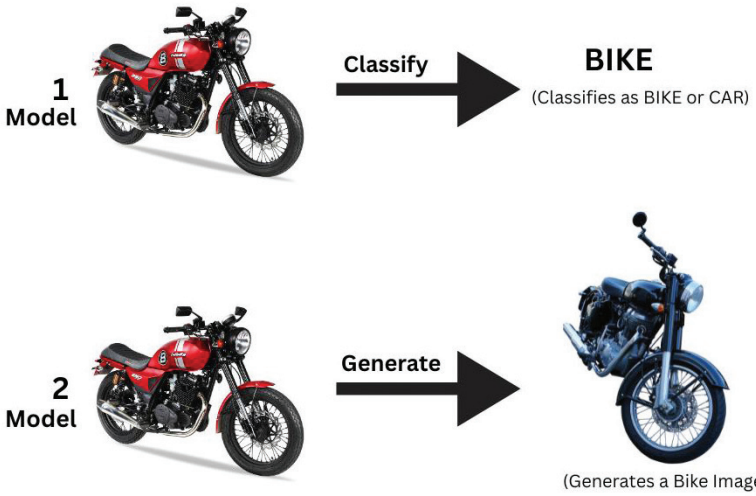
(b) Mobile Computing

(c) Social Networking

(d) Moore's Law

(iv) In a neural network, the _____ layer is where most of the learning happens, as it detects patterns or relationships in the input data that are not immediately obvious. [1]

(v)



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

(vi) According to Freytag's Pyramid, which stage involves digging into the data to find patterns and trends, often using charts and graphs? [1]

(a) Exposition (b) Inciting Incident (c) Rising Action (d) Climax

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

(i) Using only the training dataset to select the best model may lead to _____, where the model memorizes training-specific questions rather than learning general patterns. [1]

(ii) [1]

Three-way Data Split

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

(a) Test, Train (b) Validation, Train

(c) Train, Train (d) Validation, Test

(iii) Match the Computer Vision tasks in Column A with the correct descriptions in Column B. [1]

Column A	Column B
1. Object Detection	(a) Used as a biometric technology that identifies or verifies a person by analyzing their facial features.
2. Image Segmentation	(b) Is the process of assigning a label to an entire image based on its visual content.
3. Image Classification	(c) It divides an image into meaningful regions and assigns labels to those regions.
4. Face Recognition	(d) It identifies and locates multiple objects within an image by assigning class labels and drawing bounding boxes around them.

(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-b 4-a

(iv) Big Data Analytics involves various techniques for processing and analyzing large datasets. Which of the following is **NOT** one of the main types of Big Data Analytics? [1]

(a) Descriptive Analytics (b) Diagnostic Analytics

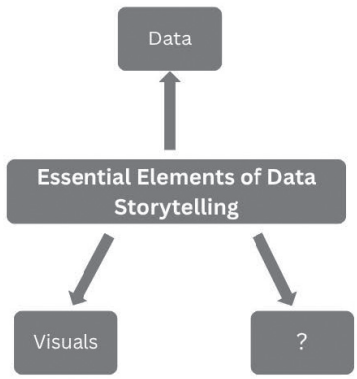
(c) Performance Analytics (d) Predictive Analytics

(v) Identify the **odd one out** from the following learning steps of neural networks: [1]

(a) ReLU (b) Forward Propagation

(c) Error Calculation (d) Backpropagation

(vi) Refer to the diagram showing the Essential Elements of Data Storytelling. It includes Data and Visuals as the two elements. What term should replace the question mark (?) to complete the diagram? [1]



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

(i) **Assertion (A):** The training dataset is the subset of data used to allow a machine learning model to learn a specific task. [1]

Reason (R): The test dataset is reserved to assess the true performance of the chosen model on data it has not seen before.

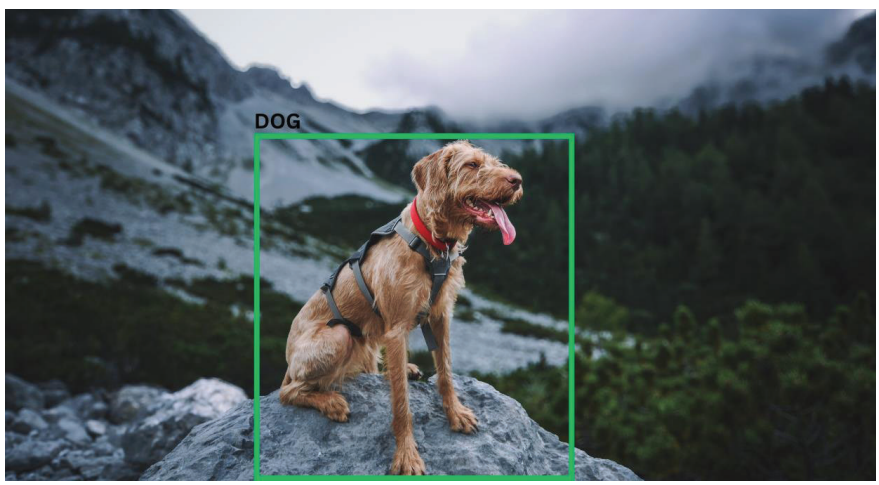
(a) Both A and R are correct and R is the correct explanation of A.

(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 locates and labels objects within an image by drawing boxes around them, the process is called _____.

(iii) Which stage in Big Data Analytics deals with the removal of errors, duplicates or irrelevant entities? [1]

(a) Data Transformation (b) Analysis

(c) Data Cleaning (d) Parallel Processing

(iv) What is the fundamental building block of a neural network that takes in inputs, processes them, and produces an output? [1]

(a) Activation Function (b) Neuron

(c) Weight (d) Bias

(v) Name any two activation functions used in neural networks. [1]

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

AI Tool	Application Type
1. GPT	(a) ChatGPT (Text Generation)
2. Gemini	(b) Video Generation
3. Google Lumiere	(c) Image Generation
4. Stable Diffusion	(d) Gemini in Google Workspace (Docs, Gmail, etc)

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

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

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

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

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

(i) The Evaluation stage of data science methodology helps in the preparation of data by addressing missing values and outliers. *(State whether this is True or False)* [1]

(ii) **Assertion (A):** Preprocessing is a crucial step in the computer vision pipeline before analysis. [1]
Reason (R): Preprocessing improves the quality of raw visual data by removing noise and standardising its format, which helps prevent inaccurate results.

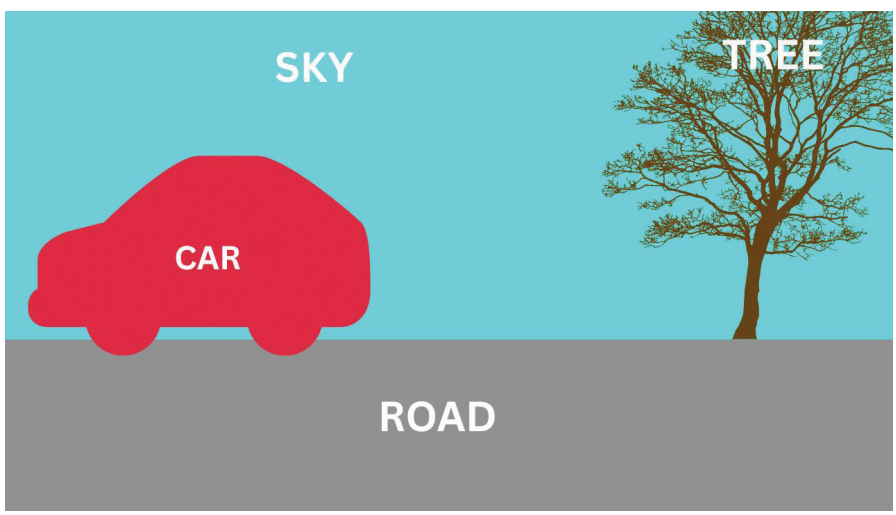
(a) Both A and R are correct and R is the correct explanation of A.

(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 displays clear and well-defined regions of the objects, complete with labels. Which computer vision task does this illustrate? [1]

(a) Image Classification (b) Object Detection

(c) Image Segmentation (d) Instance Segmentation

(iv) Match the stages of neural network learning in Column A with the correct description in Column B. [1]

Column A	Column B
1. Forward Propagation	(a) Adjusts the weights to minimize the error between the predicted and actual output.
2. Learning Rate	(b) Parameter used to control how fast the model learns.
3. Backpropagation	(c) The flow of input data throughout the neural network, layer by layer.

(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) The key mechanism within the transformer architecture that allows the model to weigh the importance of different words in a sentence is called_____. [1]

(vi) Which chart type would be most appropriate to track the change in a company's monthly revenue over a period of two years? [1]

(a) Pie Chart (b) Scatter Plot

(c) Line Chart (d) Flowchart

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 'And', 'But', 'Because' and 'Or' are examples of which part of speech? Explain their function in communication.. [2]

7. Write any two ways a person can cultivate and maintain a positive attitude. [2]

8. In a spreadsheet, you can make the text appear bold, italic or underlined to highlight important information. [2]

(a) Name this feature of a spreadsheet.

(b) Which toolbar option is commonly used to apply this feature?

9. Identify the type of entrepreneur described in each case: [2]

(a) Karan studied automobile engineering and worked for several years in a car manufacturing company. Later, he used his technical knowledge to design and develop his own line of electric bikes with innovative battery systems.

(b) Ritika established a large-scale textile factory that produces and exports garments to different countries. She manages production, marketing and distribution with a focus on expanding industrial output and employment.

10. What is Swachh Bharat Abhiyan? How does it help in improving waste management? [2]

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

11. Define the CRISP-DM approach for data analytics. List its any two steps. [2]

12. Object detection, an important task in computer vision, involves identifying and locating multiple objects within an image or video. Explain any two challenges related to object detection. [2]

13. Differentiate between Traditional and Big Data systems. [2]

14. Consider the following perceptron that predicts the crop's health with inputs, weights and a bias of 3. Calculate Output/Predicted outcome (ŷ) for the given scenario. [2]

Factor	Input	Weight
Temperature (Celsius)	22	3
Humidity (Percentage)	54	1.5
Soil Moisture	50	6

15. What is the difference between an LLM model and a product created using an LLM? [2]

16. What are the three fundamental components that form the trinity of data storytelling? [2]

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

17. Understanding the complete workflow of a data science project is essential for building effective and reliable models. Construct the full 'Foundational Methodology for Data Science' diagram, and using this diagram, explain the iterative relationship between the phases of 'Data Preparation' and 'Modelling'. [4]

18. A healthcare organization wants to use Big Data Analytics to improve patient care and hospital efficiency. Identify the key stages of Big Data Analytics represented in the following scenarios and explain them in detail: [4]

(a) The hospital collects data from patient records, wearable health devices and lab results.

(b) Data scientists clean and organize the collected data to remove errors and make it suitable for analysis.

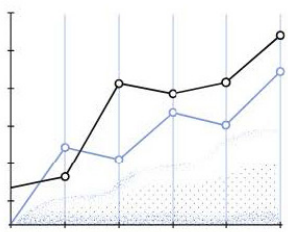
(c) The analytics team applies machine learning algorithms to detect patterns in patient symptoms and treatment outcomes.

(d) The insights from the analysis are used by doctors and management to make informed decisions and improve healthcare services.

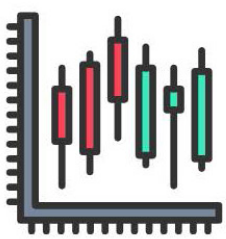
19. Explain the competitive process of Generator and Discriminator within a Generative Adversarial Network (GAN). [4]

20. Create a neat and clearly labelled block diagram illustrating how a Large Language Model (LLM) processes information, and explain each stage of the process. [4]

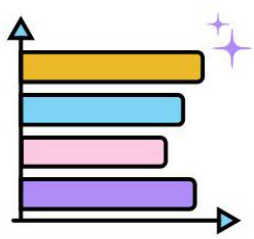
21.



Line Chart



1



2

3

The above image displays different types of data visualization charts commonly used in Data Storytelling.

The Line Chart represents trends over time. Identify and briefly explain the charts labelled as '1', '2' and '3' in the diagram.