

ANSWERS TO PRACTICE PAPER-1

SECTION A

1. (i) (b) (ii) Conscientiousness (iii) (d) (iv) (a) (v) (c)
(vi) False
2. (i) (b) (ii) Facial Recognition (iii) (d) Visualization (iv) Neuron
(v) 1 → text generation, 2 → music generation (vi) (d) Falling Action
3. (i) Evaluation (ii) (c) Data Preparation, Deployment (iii) (c) (iv) (d) Validation
(v) (d) Descriptive AI (vi) Climax
4. (i) (a) (ii) Resizing (iii) (c) Cloud computing (iv) (b) Bias
(v) Convolutional layer and Pooling layer (vi) (b)
5. (i) True (ii) (b) (iii) (b) Object Detection (iv) (b)
(v) Auto-regressive (vi) (b) Climax

SECTION B

6. The words 'Ouch!', 'Wow!', 'Hurray!' and 'Ugh!' are examples of interjections. These words are used to express sudden emotions or surprise.
7. The two steps that a person can take to manage stress effectively are:
 - (i) Deep breathing and relaxation: Practising deep breathing exercises and relaxation can help reduce stress.
 - (ii) Mindfulness and meditation: Practising mindfulness helps in present-moment awareness and reduces stress reactivity.
8. (a) This feature of LibreOffice Impress is called Slide Layout.
(b) There are three methods to change this feature, one of which is using 'Slide Layout Menu':
Click on slide menu → select Layout → choose the desired layout from the drop-down menu.
9. (a) Decisiveness
(b) Perseverance
10. Precision agriculture is a smart farming method that uses technologies like GPS, drones and sensors to collect data about crops and soil. It helps farmers improve efficiency and productivity by applying water, fertilizers and pesticides only where needed, reducing waste and increasing crop yield.
11. Design Thinking Framework is a problem-solving approach that focuses on understanding users' needs and creating innovative solutions. It is human-centred and encourages creativity and experimentation.
It consists of five steps, which are: Empathize, Define, Ideate, Prototype and Test.
12. The two ethical challenges related to computer vision are:
 - (i) Algorithm Bias: This occurs when the system gives unfair or inaccurate results because it was trained on biased or unbalanced data. For example, face recognition may work better for some groups than others.
 - (ii) Data Privacy: Computer vision often uses images and videos of people. If this data is collected or used without permission, it can violate individual privacy and lead to misuse of personal information.
- 13.

Structured Data	Semi-Structured Data
Structured data is highly organized and can fit into tables with rows and columns.	Semi-structured data includes both structured and unstructured elements, such as tags or key-value pairs.
Examples: Census data, Bank transactions, etc.	Example: XML, JSON, etc.

14. formula = $(w_1.x_1 + w_2.x_2 + w_3.x_3 + \dots + w_n.x_n) + b$
 - $y = [(3 \times 9) + (4 \times -2) + (0 \times -6)] + 2$
 - $y = (27 - 8) + 2$
 - $y = 21$
 - If $y > 0 = 1$ else 0
 - $\hat{y} = 1$

15. Generative AI is focused on creating new content, such as text, images, audio or video, based on patterns learned from data. Deep learning, on the other hand, is a broader field that uses multi-layered neural networks to recognize patterns and make predictions.

16. Freytag's pyramid consists of multiple steps, two of which are:

- (i) **Climax:** This is the most important part of the story. It is often an event in which the fortune of the protagonist turns for the better or worse in the story.
- (ii) **Falling Action:** This part covers the rest of the events that unfold after the climax has occurred, but before the final outcome is decided.

17.

	Fold 1	Fold 2	Fold 3	Fold 4	Fold 5
Split 1	Validate	Train	Train	Train	Train
Split 2	Train	Validate	Train	Train	Train
Split 3	Train	Train	Validate	Train	Train
Split 4	Train	Train	Train	Validate	Train
Split 5	Train	Train	Train	Train	Validate

	Cross-Validation	Train-Test Split
Data Division	The dataset is divided into K equal parts.	The dataset is divided into two parts: the training set and the testing set.
Number of Evaluations	The model is trained on K-1 folds and tested on the remaining fold.	The model is trained and tested only once.
Reliability	It provides more robust and reliable performance because it is averaged over K runs.	Results may be biased or unstable, as results heavily depend on which data points end up in the test set.
Suitability for Small Dataset	Highly suitable, as maximum data is used efficiently.	Not very suitable for a small dataset.
Computational Speed	Slower and requires more computation due to repeated training.	Faster and requires less computation.

18. (a) This scenario represents Velocity, which refers to the speed at which new data is generated, collected and processed. In a smart city, sensors constantly handle multiple data streams in real time to ensure quick response and decision-making.
- (b) This scenario represents Volume, which refers to the sheer scale of data being collected and stored. Smart cities generate terabytes or petabytes of data from departments like transportation, healthcare, utilities and public safety. Storing and managing data is essential.
- (c) This scenario represents Variety, which refers to different types and formats of data collected. Smart cities handle structured data and unstructured data.
- (d) This scenario represents Veracity, which refers to the reliability and quality of data. Raw smart-city data often contains missing values, sensor errors or duplicate records. Data engineers must clean and verify the data to ensure it is reliable.

19. Neural networks are considered a foundational concept of modern AI because they are the core technology behind most modern AI systems. They are designed to work like a human brain, allowing them to capture complex patterns within the data.

They are foundational because:

- (i) They enable learning from data: Neural networks can recognize patterns, classify information and make predictions without being explicitly programmed for each task.
- (ii) They power modern AI systems: Most modern AI systems, such as self-driving cars, speech recognition, are all driven by neural networks.
- (iii) Generalize across domains: Modern neural networks can generalize across various tasks, serving as universal building blocks for AI systems.

20.

	Discriminative AI	Generative AI
Primary function	Classifies or labels existing data	Generates new data samples
Resource requirement	Generally, requires fewer resources compared to Generative Models	High compute and memory resources are required
Examples of algorithms used	Decision trees, Linear regression, SVM, etc.	GANS, VAEs, LLM, etc.
Applications	Classification of cat vs dog, house price prediction, etc.	Image generation, text generation, etc.

Generative AI



Discriminative AI



21. The essential elements in the diagram are 'Data', 'Narrative' and 'Visuals'.

- (i) Data is the heart of any data story. It comprises raw information and facts that form the basis of the story. It can be quantitative or qualitative. Without reliable and accurate data, the story cannot provide any meaningful insight.
- (ii) Visuals are the art of transforming data into clear and engaging visuals like charts, graphs, maps, etc. These visuals help bring data to life, allowing viewers to understand and interpret complex information.
- (iii) Narrative is the explanation that connects the visuals and data. It gives context, highlights important points and guides the audience through insights. A strong narrative makes the information engaging and meaningful.