COMMON PRE-BOARD EXAMINATION
ARTIFICIAL INTELLIGENCE - Code No. 843
Class-XII-(2025-26)
Marking Scheme

SET: 2

SECTION A: OBJECTIVE TYPE QUESTIONS		
1.	**Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)**	
i.	Answer: TRUE	1
ii.	Answer: b. 7 Cs	1
iii.	Answer: External motivation	1
iv.	Answer: c) Sorting	1
v.	Answer: b. i, iii, iv	1
vi.	Answer: a) Both A and R are correct, and R is the correct explanation of A	1
2.	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	Answer: a. Statement 1 is true Statement 2 is false	**1**
ii.	Answer: d. K-Means	**1**
iii.	Answer: a. Both A and R are true, and R is the correct explanation of A	**1**
iv.	Answer:	**1**

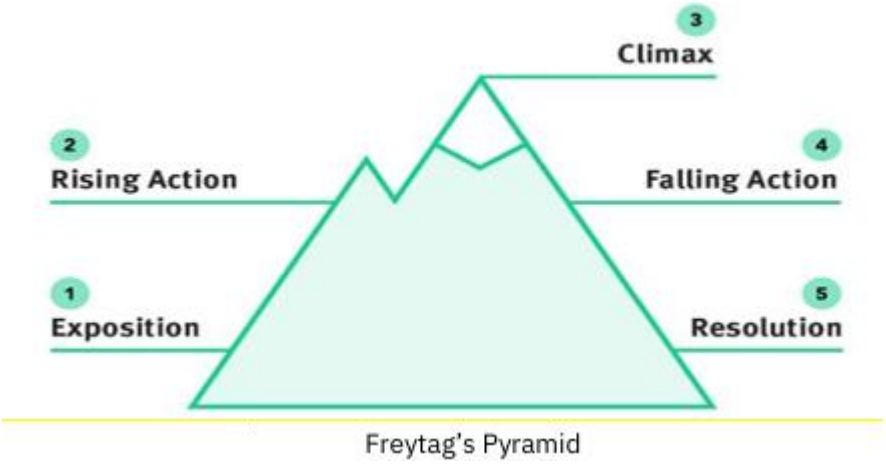
	b) It receives inputs, computes a weighted sum, applies an activation function, and produces an output.	
v.	Answer: b) Attribute original creators, verify accuracy, and acknowledge AI tools	**1**
vi.	Answer: More Memorable	**1**
3.	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	Answer: a) 1=b, 2=a, 3=d, 4=c	1
ii.	Answer: False	1
iii.	Answer: b. To visually summarize and celebrate a user's travel data and experience for the year	1
iv.	Answer: b) RNN (Recurrent Neural Network)	1
v.	Answer: d) A is incorrect, but R is correct.	1
vi.	Answer: Machine Vision	1
4.	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	Answer: Encoder & Decoder	1
ii.	Answer: a) 1=D, 2=B, 3=E, 4=A, 5=C	1
iii.	Answer: Pixels	1
iv.	Answer:	1

	b) Data mining	
v.	Answer: d) Edge detection and corner detection are ensured in images	1
vi.	Answer: b) Backpropagation	1
5.	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	Answer: Feature Engineering	1
ii.	Answer: a. Instance Segmentation	1
iii.	Answer: b) Unstructured data	1
iv.	Answer: Deep Neural Network	1
v.	Answer: c) A is true, but R is false	1
vi.	Answer: b) A visual representation of words where size indicates frequency or importance	1
SECTION B: SUBJECTIVE TYPE QUESTIONS		
Answer any 3 out of the given 5 questions on Employability Skills (2 x 3 = 6 marks) **Answer each question in 20 – 30 words.**		
6.	Answer: (Any 4 points ½ marks each) The greening of the economy presents a major opportunity to start new businesses, develop new markets and lower energy costs. Benefits of Green Jobs – a. increase the efficiency of energy and raw material. b. reduce greenhouse gas emissions.	2

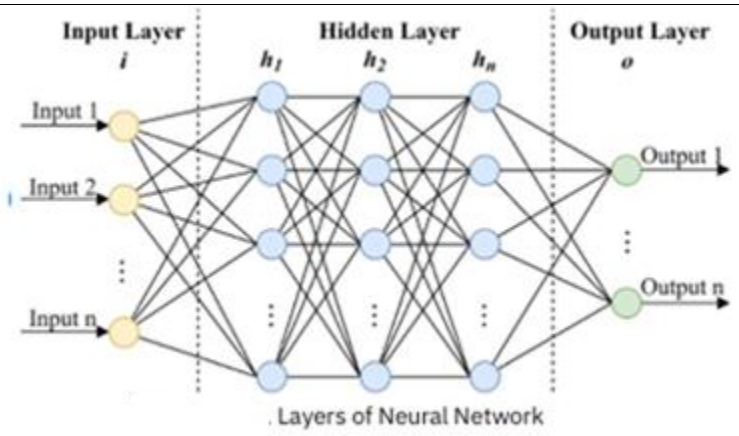
	c. control waste and pollution. d. protect and restore ecosystems. e. support adaptation to the effects of climate change	
7.	Answer: (Any two) • Paranoid personality disorder: Paranoid personality disorder is characterised by distrust for others, including friends, family members and partners. People with such a disorder mostly hold grudges against others. • Schizoid personality disorder: The term 'schizoid' refers to the natural tendency to direct attention toward one's inner life away from the external world. A person with schizoid personality disorder is detached and aloof, and prone to introspection and fantasy. The person shows little interest in forming personal relationships and seems to be emotionally cold. • Schizotypal personality disorder: People with this type of personality disorder believe that they can influence other people or events with their thoughts. They often misinterpret behaviours. This causes them to have inappropriate emotional responses. They may consistently avoid having intimate relationships.	2
8.	Answer: The attitudes that make a successful entrepreneur are – (Any 4 points. ½ marks each) a. Decisiveness – Ability to make quick and profitable decisions b. Taking Initiative – Ability to take charge and act in a situation before others c. Organizational Skills – Ability to make the optimum use of time, energy and resources to achieve the desired goals. d. Interpersonal Skills – Ability to work with others e. Perseverance – Ability to continue to do something, even when it is difficult.	2
9.	Answer: Protection helps the user to prevent data from others. The steps to protect a spreadsheet are Step 1 – Click on Tools and select Protect Spreadsheet Step 2 – Type a password Step 3 – Type the same password in the Confirm textbox	2

	Step 4 – Click on Ok	
10.	Answer: The various elements of a communication cycle are – a. Sender: the person beginning the communication. b. Message: the information that the sender wants to convey. c. Channel: the means by which the information is sent. d. Receiver: the person to whom the message is sent. e. Feedback: the receiver's acknowledgement and response to the message.	2
Answer any 4 out of the given 6 questions in 20 – 30 words each (2 x 4 = 8 marks)		
11.	Answer: $\hat{y} = \sum wixi+bias \quad = w1x1 + w2x2 + w3x3 + bias$ Substituting values of w1, x1 , w2, x2 ,w3 , x3, bias, we get $\hat{y} = (5 \text{ X } 1) + (2 \text{ X } 0) + (4 \text{ X } 1) – 3 \quad = 5 + 0 + 4 − 3 \quad = 6$ (1 mark for formula; 1 mark for calculations)	2
12.	Answer: (1M each) The main difference between classification and detection is that classification considers the image as a whole (as a single object) and determines its class. Algorithms used for classification are: Classification- KNN, KMeans Whereas detection identifies the different objects (multiple objects) in the image and classifies all of them. Algorithms used for Detection are: - YOLO, CNN, R-CNN, E-FCN	2
13.	Answer: (Write Any Two) Big Data Analytics emerges as a consequence of four significant global trends: 1. Moore's Law: The exponential growth of computing power as per Moore's Law has enabled the handling and analysis of massive datasets, driving the evolution of Big Data Analytics. 2. Mobile Computing: With the widespread adoption of smartphones and mobile devices, access to vast amounts of data is now at our fingertips, enabling real-time	2

	connectivity and data collection from anywhere. 3. Social Networking: Platforms such as Facebook, Foursquare, and Pinterest facilitate extensive networks of user-generated content, interactions, and data sharing, leading to the generation of massive datasets ripe for analysis. 4. Cloud Computing: This paradigm shift in technology infrastructure allows organizations to access hardware and software resources remotely via the Internet on a pay-as-you-go basis, eliminating the need for extensive on-premises hardware and software investments.	
14.	Answer: Evaluation (½ M) (Any 3 point 1 ½ M) • The "Evaluation" phase is crucial as it allows data scientists to assess whether the model developed during the "Modeling" phase effectively solves the business problem. • It involves testing the model on a separate dataset (usually the test set) to evaluate its performance. • If the model does not meet the requirements, adjustments are made to improve it. Without proper evaluation, there is a risk of deploying a model that performs poorly or fails to generalize to unseen data.	2
15.	Answer: (½ mark for each point) • Collect and organize the data. • Use proper visualization tools to present the data. • Observe relationships between data. • Create a simple narrative hidden in the data for the audience.	2
16.	Answer: (Any two) • Processing text requires significant computational resources, leading to high response time and costs. • LLMs prioritise natural language over the accuracy, which may result in generating factually incorrect or misleading information with high confidence.	2

	• LLMs might memorize specific details rather than generalize, leading to poor adaptability.	
Answer any 3 out of the given 5 questions in 50– 80 words each (4 x 3 = 12 marks)		
17.	Answer:  Freytag's Pyramid Freytag developed a more robust narrative framework to better understand the arc or progression of a story. The "pyramid based" dramatic structure with five key stages: 1. Introduction: The beginning of the story when the setting is established, and main characters are introduced. It provides the audience with ample background information to understand what is going to happen. 2. Rising action: The series of events that build up to the climax of the story. 3. Climax: The most intense or important point within the story. It is often an event in which the fortune of the protagonist turns for the better or worse in the story. 4. Falling action: The rest of the events that unravel after the main conflict has occurred, but before the final outcome is decided. 5. Conclusion: The conclusion of the story where all of the conflicts are resolved and outstanding details are explained.	4
18.	Answer: Generative Models such as Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs) facilitate tasks like image and text generation. 1. Generative Adversarial Networks (GANs): A Generative Adversarial Network is a type of neural network architecture. It consists of two networks, a generator, and a discriminator,	4

	that compete against each other. The generator generates new data samples, such as images or text (which are fake), while the discriminator evaluates these samples to distinguish between real and fake data. The generator aims to produce samples that are indistinguishable from real data, while the discriminator aims to differentiate between real and generated data. Through adversarial training, where these networks challenge one another, GANs learn to generate increasingly realistic samples. Applications of GANs are image generation, style transfer, and data augmentation. 2. Variational Autoencoders (VAEs): VAEs, or Variational Autoencoders, are computer programs designed to learn from data uniquely. They consist of two parts: an encoder, which understands the data and converts it into a hidden space called a latent space (latent space is the compressed representation of the actual data), and a decoder, which translates the information back from this hidden space into its original form. Unlike some other similar programs, like GANs, VAEs focus on capturing the underlying patterns of the data to generate new samples. Applications of VAEs are Data generation, detecting anomalies in data, and filling in missing information.	
19.	Answer: (3 +1 M) Every neural network comprises layers of interconnected nodes — an input layer, hidden layer(s), and an output layer. 1. Input Layer: This layer consists of units representing the input fields. Each unit corresponds to a specific feature or attribute of the problem being solved. 2. Hidden Layers: These layers, which may include one or more, are located between the input and output layers. Each hidden layer contains nodes or artificial neurons, which process the input data. These nodes are interconnected, and each connection has an associated weight. 3. Output Layer: This layer consists of one or more units representing the target field(s). The output units generate the final predictions or outputs of the neural network.	4

	 Layers of Neural Network The term "depth or deep" in deep learning refers to the number of hidden layers of a neural network. Increasing depth allows the network to learn more complex patterns .	
20.	Answer: The 6V's of Big Data expand upon the 3V framework by adding three more characteristics: Volume: The huge amount of data generated every day. Ie; In big data the data volume exceeds gigabytes. Velocity: The speed at which data is produced and needs to be processed. For example: Google alone generates more than 40,000 search queries per second. Variety: The different types of data (structured, semi-structured, unstructured) like text, images, audio, videos, and so on. Veracity: The accuracy and trustworthiness of the data, ensuring its suitability for analysis. Value: The insights and benefits derived from analyzing the data. Variability: The inconsistencies or unpredictability in data flows, requiring systems to adapt. Together, these dimensions highlight the complexity of managing and analyzing Big Data effectively.	4
21.	Answer: (1 M for each analytics) There are four main types of data analytics: Descriptive Analytics: This type of analytics focuses on summarizing historical data to understand what happened in the past. It uses statistical methods and visualization tools (e.g., bar charts, histograms) to identify trends and patterns. Example: Analyzing last quarter's sales data to understand the overall performance. Diagnostic Analytics:	4

	Diagnostic analytics seeks to understand why something happened. It typically involves methods like root cause analysis, hypothesis testing, and correlation analysis to uncover the factors behind certain events. Example: Investigating why sales dropped in a particular region by examining customer feedback, marketing campaigns, and competitor activity. Predictive Analytics: Predictive analytics uses historical data and statistical models to predict future outcomes. It helps businesses anticipate future trends or events. Example: Forecasting future sales based on historical data and seasonal trends. Prescriptive Analytics: This type of analytics provides recommendations for the best course of action to achieve a desired outcome. It uses optimization and simulation techniques to suggest decision-making strategies. Example: Recommending the optimal price for a product during a holiday sale to maximize revenue.	
	******END OF THE QUESTION PAPER******	