

**Model Test Paper 1 2025-26**

**ARTIFICIAL INTELLIGENCE (843)**

**Class XII**

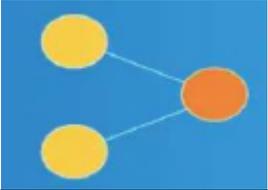
**Time Allowed: 2 Hours**

**Maximum Marks:50**

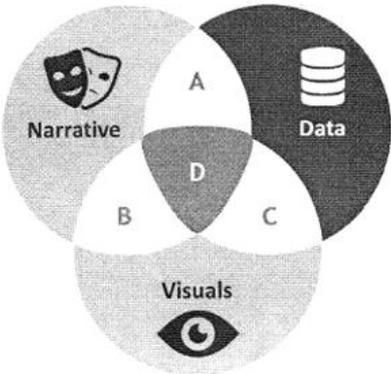
**General Instructions:**

Out of the given (5 + 16 =) 21 questions, a candidate has to answer (5 + 10 =) 15 questions

<b>SECTION A: OBJECTIVE TYPE QUESTIONS</b>		
<b>1.</b>	<b>Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)</b>	
	i. "Switching off unused devices" is an example of which green practice? a) Energy conservation b) Waste disposal c) Recycling d) Green architecture	1
	ii. Assertion (A): Entrepreneurs often identify opportunities where others see challenges. Reason (R): Entrepreneurship requires creativity, innovation, and risk-taking. a) Both A and R are true, and R is the correct explanation of A b) Both A and R are true, but R is not the correct explanation of A c) A is true, R is false d) A is false, R is true	1
	iii. _____ refers to an individual's ability to control their emotions, thoughts, and behaviour effectively.	1
	iv. _____ personality disorders is characterised by distrust for others, including friends, family members and partners.	1
	v. Match the columns, and then, choose the correct answer. 1. Grid of horizontal rows and vertical columns 2. Horizontal arrangement of cells numbered 1, 2, 3, 4 3. Where rows and columns meet or intersect 4. Which contains one or more worksheets 5. Vertical arrangement of cells named A, B, C, D (a) 1-E, 2-A, 3-B, 4-D, 5-C (b) 1-E, 2-B, 3-C, 4-D, 5-A (c) 1-A, 2-B, 3-C, 4-D, 5-E (d) 1-E, 2-A, 3-D, 4-B, 5-C	1
	vi. The full form of ICT is _____.	1
<b>2.</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
	i. The activation function in a neural network is used to: a) Control the input size b) Normalize the output values c) Introduce non-linearity into the model d) Increase the number of neurons	1
	ii. Which characteristic of Big data this image is showing: a. Volume b. Velocity c. Value d. Variability 	1
	iii. Which algorithm may be used for supervised learning in computer vision? a. KNN b. K-means c. K-fold d. KEAM	1
	iv. _____ classifies pixels belonging to a particular class. Objects belonging to the same class are not differentiated.	1

	<p>v. Alongside the benefits of neural networks, which of the following is a major ethical concern?</p> <p>a) Faster computation  b) Data privacy and algorithmic bias  c) Increased data storage  d) Improved accuracy</p>	1		
	<p>vi. What type of neural network is shown in the image:</p>  <p>a. CNN  b. RNN  c. FFNN  d. Perceptron</p>	1		
3.	<p><b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b></p>			
	<p>i. What does a neuron in an artificial neural network do?</p> <p>a) Stores all the data permanently  b) Processes input data and passes output to the next layer  c) Controls the number of hidden layers  d) Deletes irrelevant information</p>	1		
	<p>ii. Big Data Analytics involves which of the following processes on datasets to improve organizational operations?</p> <p>a) Storing, printing, and sharing data only  b) Copying, deleting, and hiding data  c) Collecting, processing, cleaning, and analyzing data  d) Guessing and predicting without using data</p>	1		
	<p>iii. The process where the network adjusts its weights based on errors is called:</p> <p>a) Forward Propagation  b) Activation  c) Back Propagation  d) Feature Extraction</p>			
	<p>iv. In Computer vision, which of the following tasks is used for single object.</p> <p>a. Object Detection                      c. Classification + Localization  b. Instance Segmentation                d. Non - Localization</p>	1		
	<p>v. _____ involves analyzing datasets to uncover insights, trends, and patterns.</p>	1		
	<p>vi. With respect to evaluation, for which of the following does the prediction and reality match ?</p> <p>a. True positive and False positive                      c. True positive and True negative  b. False positive and False negative                      d. True positive and False negative 104</p>	1		
4.	<p><b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b></p>			
	<p>i. Match the correct question from <b>Column A</b> to the correct step of the <b>Data Science Methodology</b> in <b>Column B</b>.</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Column A</b></p> <p>1. Has the solution been put to use for making decisions in real-world conditions?</p> <p>2. Is the performance of the model satisfactory compared to the expected results?</p> <p>3. What kind of data needs to be gathered to address the business problem?</p> <p>4. In what way can the data be visualized to get to the required answer?</p> <p><b>Options:</b></p> <p>a) 1 → b, 2 → d, 3 → a, 4 → c  b) 1 → d, 2 → b, 3 → c, 4 → a  c) 1 → a, 2 → c, 3 → b, 4 → d  d) 1 → c, 2 → b, 3 → d, 4 → a</p> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Column B</b></p> <p>a. Data Requirements  b. Deployment  c. Analytic Approach  d. Evaluation</p> </td> </tr> </table>	<p><b>Column A</b></p> <p>1. Has the solution been put to use for making decisions in real-world conditions?</p> <p>2. Is the performance of the model satisfactory compared to the expected results?</p> <p>3. What kind of data needs to be gathered to address the business problem?</p> <p>4. In what way can the data be visualized to get to the required answer?</p> <p><b>Options:</b></p> <p>a) 1 → b, 2 → d, 3 → a, 4 → c  b) 1 → d, 2 → b, 3 → c, 4 → a  c) 1 → a, 2 → c, 3 → b, 4 → d  d) 1 → c, 2 → b, 3 → d, 4 → a</p>	<p><b>Column B</b></p> <p>a. Data Requirements  b. Deployment  c. Analytic Approach  d. Evaluation</p>	1
<p><b>Column A</b></p> <p>1. Has the solution been put to use for making decisions in real-world conditions?</p> <p>2. Is the performance of the model satisfactory compared to the expected results?</p> <p>3. What kind of data needs to be gathered to address the business problem?</p> <p>4. In what way can the data be visualized to get to the required answer?</p> <p><b>Options:</b></p> <p>a) 1 → b, 2 → d, 3 → a, 4 → c  b) 1 → d, 2 → b, 3 → c, 4 → a  c) 1 → a, 2 → c, 3 → b, 4 → d  d) 1 → c, 2 → b, 3 → d, 4 → a</p>	<p><b>Column B</b></p> <p>a. Data Requirements  b. Deployment  c. Analytic Approach  d. Evaluation</p>			
	<p>ii. Which condition of evaluation does the following indicate:  Prediction: No            Reality : Yes</p>	1		

	<p>a. False Positive      c. False Negative  b. True Positive      d. True Negative</p>	
	iii. _____removes unwanted elements like blurriness, random spots, or distortions.	1
	<p>iv. Which of the following statement is correct about cross validation procedure?  i-It randomly shuffle the data set  ii-It organizes the data into K group  iii-It summarize the model ability  iv-For each distinct group it does not fit a model and test it against the test set.  a-i, ii and iii      b- ii, iii and iv      c-i, iii and iv      d-i, ii and iv</p>	1
	<p>v. _____ is a structured approach for communicating insights drawn from data, combined with visuals and narratives.  a. Graphs      b. Data visualization      c. Data storytelling      d. Data acquisition</p>	1
	<p>vi. What does the term “image processing” refer to in Computer Vision?  a. Editing Videos      c. Playing Audio files  b. Extracting meaningful information from images      d. Compiling codes</p>	1
<b>5.</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
		1
	i. Data Collection is the stage of the data science methodology where relevant data is gathered from various sources to solve a specific problem. (True/False)	1
	<p>ii. Expand the term RMSE.  a. Rational Median Square Error      b. Root Median Square Estimate  c. Root Mean Squared Error      d. Root Median Sequential Estimate</p>	1
	<p>iii. What is the main challenge posed by the regulatory compliance aspect of Big Data?  a. Technical expertise      c. Managing the volume of data  b. Adhering to data protection law.      d. Cost of acquiring and storing data.</p>	1
	<p>iv. Assertion (A): The architecture of a neural network can significantly influence its learning capability.  Reason (R ): The number of layers and neurons in a neural network determines the complexity of the patterns it can learn.  a) Both A and R are true, and R is the correct explanation of A  b) Both A and R are true, but R is not the correct explanation of A  c) A is true, R is false      d) A is false, R is true</p>	
	<p>v. The chart which represents distribution of continuous data through bars is known as _____  a) Histogram      b) Line Chart      c) Candle Stick chart      d) Bar Chart</p>	1
	<p>vi. What does "Storytelling for audience" emphasize in data storytelling?  a) Ignoring the audience's preferences and background knowledge  b) Adapting the storytelling approach based on the audience's understanding and context  c) Presenting data in a complex and technical manner  d) Excluding the audience from the storytelling process</p>	1
	<b>SECTION B: SUBJECTIVE TYPE QUESTIONS</b>	
	<b>Answer any 3 out of the given 5 questions in 20 – 30 words on Employability Skills (2 x 3 = 6 marks)</b>	
<b>6.</b>	What are interjections? Give two examples.	2
<b>7.</b>	What is waste exchange? How does it help reduce waste?	2
<b>8.</b>	Differentiate between a worksheet and a workbook	2
<b>9.</b>	Describe any two major roles/functions performed by an entrepreneur.	2
<b>10.</b>	<p>Define any two of the following:  (a) Self-management  (b) Self-awareness  (c) Motivation</p>	2
	<b>Answer any 4 out of the given 6 questions in 20 – 30 words each (2 x 4 = 8 marks)</b>	
<b>11.</b>	What is an LLM- large language mode? Explain transformers in LLMs.	2

12.	Why has Data story telling become very powerful now?	2												
13.	Differentiate between the Train–Test Split and Cross-Validation methods .	2												
14.	<p>Consider the following <b>perceptron model</b> that predicts the <b>employee productivity level</b> in a company. The perceptron uses three input factors, each with its corresponding weight, and has a <b>bias of –2</b>. Calculate the <b>Output / Predicted outcome (<math>\hat{y}</math>)</b> for the given scenario.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Factor</th> <th style="text-align: center;">Input (x)</th> <th style="text-align: center;">Weight (w)</th> </tr> </thead> <tbody> <tr> <td>Task Completion Rate</td> <td style="text-align: center;">1</td> <td style="text-align: center;">6</td> </tr> <tr> <td>Social Media Usage During Work</td> <td style="text-align: center;">0</td> <td style="text-align: center;">3</td> </tr> <tr> <td>Sleep Quality</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>	Factor	Input (x)	Weight (w)	Task Completion Rate	1	6	Social Media Usage During Work	0	3	Sleep Quality	1	2	2
Factor	Input (x)	Weight (w)												
Task Completion Rate	1	6												
Social Media Usage During Work	0	3												
Sleep Quality	1	2												
15.	Discuss in brief any two challenges of Computer vision.	2												
16.	What are the differences between generative AI and discriminative AI?	2												
<b>Answer any 3 out of the given 5 questions in 50 – 80 words each (4 x 3 = 12 marks)</b>														
17.	<p>Smart Agriculture using computer vision: A drone captures high resolution images of a farm to detect signs of crop disease. The AI model highlights areas where leaf discoloration, irregular texture or early wilting appear. Analyse the situation and answer the following questions:</p> <p>(a) What feature extraction methods are relevant here and why? (b) How does image pre-processing improve detection accuracy in this scenario? (c) What role could segmentation and object detection play in analysing crop health? (d) Suggest how such a model could be trained and improved over time.</p>	4												
18.	Draw the diagram of Foundational Methodology of Data Science. What importance does Data Understanding and Data Preparation stage involves?	4												
19.	Explain the most common types of neural networks with diagrams and applications (any four).	4												
20.	<p>A global health and fitness app is used by millions of people every day to track their workouts, diet, and sleep. Identify the characteristics of Big Data you can relate to in the following scenarios and explain them in detail:</p> <p>a) Millions of users log their workouts, steps, and calorie intake every minute, while the app updates live fitness leaderboards and suggestions. b) The company’s cloud servers store terabytes of data, including user profiles, daily logs, health records, and progress reports collected over several years. c) The data collected comes in multiple formats — structured (user profiles, daily statistics), semi-structured (JSON-based sensor data), and unstructured (photos of meals, videos of workouts, text-based feedback). d) Sometimes, the app records missing or duplicate entries from fitness devices, and the analytics team cleans the data to remove inconsistencies and ensure accuracy before generating insights.</p>	4												
21.	<p>With reference to data storytelling, consider the following diagram. Name A, B, C and D. Also mention How are three elements interlinked with each other?</p> 	4												