Max. Time: 2 Hours   **Max. Marks: 50**
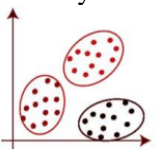
General Instructions:

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):***
   i. *This section has 05 questions.*
   ii. *Marks allotted are mentioned against each question/part.*
   iii. *There is no negative marking.*
   iv. *Do as per the instructions given.*
7. ***SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):***
   i. *This section has 16 questions.*
   ii. *A candidate has to do 10 questions.*
   iii. *Do as per the instructions given.*
   iv. *Marks allotted are mentioned against each question/part.*

SECTION A: OBJECTIVE TYPE QUESTIONS

Q1	**Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)**	
i.	Pranjali gets up at 5 am and goes to her badminton classes. Then she comes home and finishes her homework before going to school. She does this all by herself. No one tells her to do it. This is an example of (a) Self-motivation (b) External motivation (c) Both self and external motivation (d) Not any specific type of motivation	1
ii.	Which of the following is a valid file extension for Notepad file? (a) .jpg (b) .doc (c) .text (d) .txt	1
iii.	Ravi's customer comes to his store and starts shouting at him. He does not get angry. He listens to what his customer is saying. He is _____. (a) Hardworking (b) Confident (c) Patient (d) Trying new ideas	1
iv.	Statement 1: A realistic goal is one that has no timeline or plans for execution. Statement 2: Breaking down big goals into smaller parts will make the goal achievable. (a) Both Statement I and Statement II are correct (b) Both Statement I and Statement Il are incorrect (c) Statement I is correct but Statement II is incorrect (d) Statement I is incorrect but Statement II is correct	1
v.	Rohit, when leaving from his friend's house is bidding goodbye by waving his hands. Which type of non-verbal communication is used by Rohit? (a) Expression (b) Body language (c)Gesture (d)All the above	1
vi.	The aim of Sustainable development is (a) to inculcate the value of self-resistance amongst the people (b) to save natural resources for everyone (c) to utilize judiciously and ensure its availability for future generations (d) All of these	1
Q2	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	Chatbots and smart bots are related to _____ domain of AI. (a) Data Science (b) Machine Learning (c) Computer Vision (d) Natural Language Processing	1
ii.	Results based on discriminatory assumptions made while developing algorithm by the developer is called as _____.	1

		(a) AI Ethics (b) AI Bias (c) Test Data (d)Training Data	
iii.		Divya was learning neural networks. She understood that there were three layers in a neural network. Help her identify the layer that does processing in the neural network.	**1**
		(a) Output layer (b) Hidden layer (c) Input layer (d) Data layer	
iv.		Statement A: Neural networks are made up of layers of neurons.	**1**
		Statement B: Human brain consists of millions of neurons.	
		(a) Only Statement A is correct	
		(b) Only Statement B is correct	
		(c) Both the statements are correct	
		(d) None of the statements is correct	
v.		In which of the following, a person is constantly followed/chased by another person or group of several peoples?	**1**
		(a) Phishing (b) Bulling (c) Stalking (d)Identity theft	
vi.		In text normalization, text from multiple documents and the term used for the whole textual data from all the documents altogether is known as _____.	**1**
		(a) Corpus (b) Tokens (c) Lemma (d) Stem	
Q3		**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.		Which of the following is Not AI?	**1**
		i. Air Conditioner	
		ii.Automatic Washing Machine	
		iii. Self-Driving Car	
		iv. Smart TV	
		(a) i, ii & iii (b) i & ii (c) i, ii & iv (d) iii & iv	
ii.		The AI Project Cycle is a _____ that a company must follow in order to derive value from an AI project and to solve the problem.	**1**
		(a) Step-by-step process (b) Random process	
		(c) Reverse process (d) None of the above	
iii.		Data science is the process of diverse set of data through?	**1**
		(a) Organizing data (a) Processing data	
		(c) Analysing data (d) All of the above	
iv.		Each evaluation metric represents the ratio of true negatives to all actual negative instances and is commonly used in binary classification.	**1**
		(a) Accuracy (b) Precision (c) Recall (d) Specify	
v.		What is a chatbot called which uses simple FAQs without any intelligence?	**1**
		(a) Smart Chatbot (b) Script Chatbot (c) AI Chatbot (d) ML Chatbot	
vi.		The percentage of correct predictions out of all observations.	**1**
		(a) Prediction (b) Accuracy (c) F1 Score (d) None of these	
Q4		**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.		Identify the algorithm based on the given graph	**1**
		(a) Dimensionality reduction (b) Classification	
		(c) Clustering (d) Regression	
ii.		Statement 1: F1 score is evaluated based on precision or recall.	**1**
		Statement 2: When the F1 score is 0, the model accuracy is 100%	
		(a) Both statement1 and statement 2 are correct.	
		(b) Both statement1 and statement 2 are incorrect.s	
		(c) Statement 1 is correct but statement 2 is incorrect.	
		(d) Statement 1 is incorrect but statement 2 is correct.	
iii.		Spam filtering in email is an example of _____	**1**
		(a) Text summarisation (b) Text Classification	
		(c) Sentiment Analysis (d) None of the above	
iv.		_____ element helps us to understand and categorize who is directly and indirectly affected by the problem.	**1**

	(a) Who (b) What (c) Where (d) Why	
v.	"Converting text to a common case" is a step in Text Normalisation. (True/False)	**1**
vi.	What is the process of extracting emotions within a text data using NLP called? (a) Sentiment Analysis (b) Emotional Data Science (c) Emotional Processing (d) Emotional Classification	**1**
Q5	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	How many tokens are there in the following sentence: "Traffic Jams have become a common part of our lives nowadays. Living in an urban area means, you have to face traffic each and every time you get out on the road. Mostly, school students opt for buses to go to school.	**1**
ii.	Recall method is not depend on True negative. (True/False)	**1**
iii.	What does the pixel value represent in a grayscale image? (a) The color (b) The intensity (c) The contrast (d) The brightness	**1**
iv.	Aditi, a student of class XII developed a chatbot that clarifies the doubts of Economics students. She trained the software with lots of data sets catering to all difficulty levels. If any student would type or ask questions related to Economics, the software would give an instant reply. Identify the domain of AI in the given scenario. (a) Computer Vision (b) Data Science (c) Natural Language Processing (d) None of these	**1**
v.	What is important to make a Good AI Machine? (a) Algorithm (b) Data (c) Test cases (d) All of the above	**1**
vi.	How you can identify the problem scoping in the project. (a) Understand why the project was started (b) Define the project's primary objectives (c) Outline the project's work statement. (d) All of the above	**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.

Q6	Write any two ways to overcome barriers to effective communication.	**2**
Q7	Raghu always schedules all the activities he has to complete in a day. What is he doing? Elaborate on that quality you see in Raghu which you can imbibe.	**2**
Q8	Write about the various threats to a computer and its data.	**2**
Q9	Write about any two qualities of successful Entrepreneurs.	**2**
Q10	What are the core skills required by a person who wants to contribute towards environment?	**2**

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

Q11	What is AI Access?	**2**
Q12	What is a problem statement template and what is its significance?	**2**
Q13	What is machine learning?	**2**
Q14	Explain the term "Computer Vision" and its primary goal.	**2**
Q15	What is the need of text normalization in NLP?	**2**
Q16	Define confusion matrix.	**2**

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

Q17	An IT company situated in Bombay developed an AI model which predicts the purchasing of electronic gadgets. During testing, the AI model came up with the following predictions. Based on the given predictions, calculate the following | Confusion Matrix		Reality	
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		YES	**NO**
Prediction	**YES**	60	25
	NO	5	10 | i. How many total tests have been performed in the above scenario?	**4**

	ii. Calculate precision, recall and F1 score	
Q18	Define Text normalization and explain the different steps in involved.	**4**
Q19	Explain Data Exploration Stage.	**4**
Q20	What are the domains of Artificial intelligence?	**4**
Q21	Explain Rule-based AI modelling approaches.	**4**

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