M.M. 50   **TIME – 2Hrs.**

General Instruction:

1. Please read the Instruction carefully.
2. This Question paper consists of 21 questions in two 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 instruction given
   iv. iv. Marks allotted are mentioned against each question/part.

SECTION - A : OBJECTIVE TYPE QUESTIONS

Q.No.	QUESTIONS	MARKS
Q.1	**Answer any 4 out of the given 6 questions on Employability Skills (1x4=4 marks)**	
i.	Ramesh talks very freely with his colleagues, but when he tries to speak with his boss, he feels restricted and cannot communicate in the same manner. This is an example of: (a) Linguistic barrier (b) Physical barrier (c) Organizational barrier (d) Interpersonal barrier	1
ii.	The shortcut key for re-do is _____. (a) Ctrl + A (b) Ctrl + R (c) Ctrl + Z (d) Ctrl + Y	1
iii.	Ritika is preparing for her board exams. She often feels stressed and anxious due to the heavy workload. Her teacher advised her to adopt an activity that would effectively help her manage stress and improve focus. Which of the following should she choose? (a) Meditation (b) Watching TV (c) Arguing with friends (d) Sleeping for long hours	1

iv.	Anjali left her job and started her own online clothing business. She is an: (a) Consultant (b) Manager (c) Employee (d) Entrepreneur	1
v.	Neha sets a study timetable for herself and follows it regularly. She finishes her homework and projects before the deadline without needing reminders from her parents or teachers. This behavior reflects her: (a) Discipline (b) Self-awareness (c) Self-motivation (d) Time Management	1
vi.	Which of the following best describes green skills? (a) Skills related to digital marketing and IT development (b) Skills that help in promoting environmental sustainability and reducing ecological impact (c) Skills needed for traditional industrial jobs (d) Skills focused only on financial management	1
Q.2	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	In a grayscale image what does a pixel value of 255 represent? (a) Complete darkness (black) (b) Complete brightness (white) (c) Medium gray (d) Transparent pixel	1
ii.	Which of the following is a key concern of AI ethics? (a) Ensuring algorithms are transparent and fair (b) Increasing the speed of AI computations (c) Reducing hardware costs for AI systems (d) Maximizing social media engagement	1
iii.	What is the main purpose of a sensor in a data acquisition system? (a) To store data (b) To measure physical quantities and convert them into signals (c) To process digital signals (d) To display the data on a screen	1
iv.	Which of the following is an example of structured data? (a) Database tables (b) Social media posts (c) Images (d) Voice recordings	1

v.	When data is divided into training and testing sets, the purpose of testing data is to: (a) Train the algorithm (b) Evaluate model performance (c) Store backup (d) Increase dataset size	1
vi.	Which of the following approaches is primarily used by computers to make predictions from data? (a) Visual Learning (b) Auditory Learning (c) Machine Learning (d) Memorization	1
Q.3	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	Aman is designing an AI system to automate tasks in his lab. To ensure it functions correctly, he needs to understand the components that make up an AI machine. Which of the following shows his understanding of AI systems? (a) He knows AI systems need only software. (b) He knows AI systems need only hardware. (c) He thinks only machines/devices are enough for AI. (d) He knows AI systems require software, hardware, and machines/devices to work together.	1
ii.	A data scientist wants to evaluate how close the predictions of a model are to the actual outcomes. Which metric should they primarily consider? (a) Recall (b) Accuracy (c) F1 Score (d) Reliability	1
iii.	Why is text often converted to lowercase during text normalization? (a) To make the text look simpler (b) To treat words like "Data" and "data" as the same (c) To reduce the number of characters (d) To remove punctuation	1
iv.	In digital imaging, a color image is typically stored as a combination of: (a) Single brightness values for each pixel (b) Three values representing red, green, and blue for each pixel (c) Only black and white pixels (d) Indexed numbers without color information	1
v	For tasks like data cleaning, visualization, and predictive modeling, data scientists often use: (a) Python (b) C++ (c) Assembly (d) HTML	1
vi.	In problem-solving, understanding who is impacted by a challenge helps in prioritizing actions. Which element specifically focuses on this? (a) Where (b) Who (c) Why (d) What	1

Q.4	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	In Natural Language Processing (NLP), breaking a sentence like "AI is powerful" into separate words — ["AI", "is", "powerful"] — is known as: (a) Segmentation (b) Tokenization (c) Normalization (d) Stemming	1
ii.	In the context of Artificial Intelligence, which of the following can be considered as data? (a) Numbers (b) Text (c) Images (d) All of the above	1
iii.	Full form of CNN in AI is: (a) Convolutional Neural Network (b) Central Neural Node (c) Computer Network Node (d) Clustered Neural Network	1
iv.	Which of the following is not a common application of Natural Language Processing (NLP)? (a) Speech recognition (b) Machine translation (c) Image classification (d) Sentiment analysis	1
v.	Rita is worried that with the introduction of AI-powered customer service chatbots, her job as a call center employee may be replaced. This situation is an example of: (a) AI Bias (b) Data Security (c) AI creating Unemployment (d) AI Access	1
vi.	Which evaluation metric does not take True Negatives into account? (a) Accuracy (b) Recall (c) Specificity (d) Precision	1
Q.5	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	Which of the following does NOT lead to bias in AI models? (a) Improper assumptions (b) Uneven data collection (c) Proper testing on data (d) Lack of diversity in data	1

ii.	Statement 1: F1 score combines precision and recall to evaluate a model. Statement 2: A low F1 score indicates a poorly performing model in terms of positive class prediction. (a) Both statements are correct (b) Both statements are incorrect (c) Statement 1 is correct but statement 2 is incorrect (d) Statement 1 is incorrect but statement 2 is correct	1
iii.	In Natural Language Processing, which technique represents text as a collection of individual words without considering grammar or word order? (a) Bag of Words (b) Term Frequency (c) Word Embedding (d) Stop Words Removal	1
iv.	Which of the following NLP processes reduces words to their base or root form without necessarily being a valid word? (a) Lemmatization (b) Stemming (c) Tokenization (d) POS Tagging	1
v.	A system that predicts future weather conditions like temperature, humidity, and rainfall uses which type of technology? (a) Robotics (b) Artificial Intelligence (c) Natural Language Processing (d) Cloud Computing	1
vi.	In a classification model, if the model fails to predict an event that actually occurs, this situation is called: (a) True Negative (TN) (b) False Negative (FN) (c) False Positive (FP) (d) True Positive (TP)	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.	
Q.6	Name any two physical or emotional signs that indicate a person is under stress.	2
Q.7	Ayesha successfully starts a small business by arranging resources and making important business decisions. Which two functions of an entrepreneur is she demonstrating?	2
Q.8	What do you understand by visual communication? Give two reasons why it is important in daily life.	2
Q.9	How can you recover a file that was accidentally deleted from the Recycle Bin?	2
Q.10	What are Sustainable Development Goals (SDGs)?	2

	Answer any 4 out of the given 6 questions in 20 – 30 words each (2 x 4 = 8 marks)	
Q.11	Differentiate between Machine Learning and Deep Learning.	2
Q.12	Which learning model is best for categorizing labeled data, and why?	2
Q.13	What is target advertisement, and how does it benefit businesses?	2
Q.14	Differentiate between greyscale images and rgb images.	2
Q.15	What are Stop Words?	2
Q.16	Draw a confusion matrix for the following values: True Positives = 250 True Negatives = 120 False Positives = 30 False Negatives = 50	2
	Answer any 3 out of the given 5 questions in 50– 80 words each (4 x 3 = 12 marks)	
Q.17	Your younger sibling asked how a ride-hailing app(uber/ola/rapido) knows the fastest route to reach a destination. Explain how GPS and AI work together to help the app suggest the best route.	4
Q.18	Design a 4W Problem Canvas to address the issue of plastic waste management in your locality.	4
Q.19	Definae Reinforcement and Unsupervised learning.	4
Q.20	Define the following with examples: a) Sentence segmentation. b) Tokenisation.	4
Q.21	A machine learning model has been developed to detect whether emails are "Spam" or "Not Spam." The model was tested on a dataset of 400 emails, and the resulting confusion matrix is as follows: |		REALITY	
		POSITIVE/YES	NEGATIVE/NO
P R E D I C T I O N	POSITIVE/YES	150	40
	NEGATIVE/NO	50	60 | Calculate the Accuracy, Precision, Recall, and F1 Score for this model.	4