O.S.D.A.V.Public School, Kaithal
PreBoard Exam (2024-25)
Subject : Artificial Intelligence(417)
Class : X

SET - A

Time:- 2 hrs.   M.M.:- 50
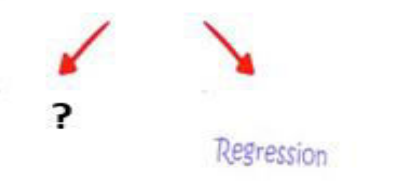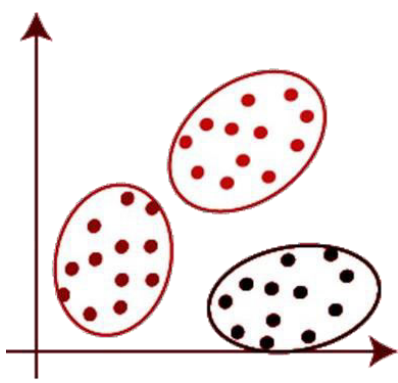
General Instructions:

Please read the instructions carefully.

1. This Question Paper consists of **20 questions** in two sections: Section A & Section B.
2. Section A has Objective type questions whereas Section B contains Subjective type questions.
3. **Out of the given (5 + 15 =) 20 questions, a candidate has to answer (5 + 10 =) 15 questions in the allotted (maximum) time of 2 hours.**
4. All questions of a particular section must be attempted in the correct order.
5. **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.
6. **SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):**
    i. This section has 15 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	
Q. 1 **Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)**	
i. Which of the following is a sign of Psychological distress. (a) Anxiety (b) Headache (c) Disturbed sleep (d) Low energy Ans : **(a) Anxiety**	1
ii. _____is the force that drives you to work hard and put efforts for self-development. (a) Self-motivation (b)Self-defense (c) Self-regulation (d) None of these **Ans**. (a) Self-motivation	1
iii. The_____option is used to recall a file from the Recycle Bin. (a) Title bar (b) Restore (c) Rename (d) None of these **Ans**. (b) Restore	1
iv. A virus can cause : (a) Computer System slow (b) deletion of files (c) both (a) and (b) (d) None of these **Ans. (c) both (a) and (b)**	1

v. Statement 1 : A goal has a deadline and fixed plan for achieving the same
 	
Statement 2 : Attempting a smaller part of big goal at a time make the goal achievable
  a) Both Statement 1 and statement 2 are correct
  b) Both Statement 1 and statement 2 are in-correct
  c) Statement 1 is correct but statement 2 is incorrect
  d) Statement 1 is incorrect but statement 2 is correct
Ans : **(a). Both Statement 1 and statement 2 are correct**
	1

vi. A person who sets up business on taking the financial risks in the hope of profit is termed as___. (a) Businessman (b) Entrepreneur (c) Seller (d) None of these **Ans**. (b) Entrepreneur	1

Q. 2	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)	
i.	Subodh Kumar is a student of grade five. He likes to humming song constantly at his desk. He plays catchy tune any time he gets a chance. He also participates cultural programs. Which intelligence does he demonstrate? a) Linguistic b) Logical-Mathematical c) Musical d) Kinesthetic Ans. C)	1

ii.	
	This structure directly refers to:
	   a) Computer Vision b) Neural Network
	   b) Natural Language Processing d) Machine Learning
	Ans b)
		1

iii.	**Assertion(A): The learning-based approach can further be divided into three parts** **Reason (R): Classification model refers to supervised learning.** a) Both A and R are correct and R is the correct explanation of A b) Both A and R are correct but R is NOT the correct explanation of A c) A is correct but R is not correct d) A is not correct but R is correct. Ans b)	1

iv.	_____helps us to summaries all the key points into one single outline so that in future, whenever there is need to look back at the basis of the problem, we can take a look at it and understand the key element of it.
	  a. 4W Problem Canvas b. Algorithm
	  c. Problem Statement Template d. Data Acquisition
	Ans c.
		1

v.	**Choose the correct option in context of the following Statement:** **Unsupervised learning models.** A. helps the user in understanding what the data is about B. used to identify relationships, patterns and trends out of the data C. works on labelled dataset D. is a type of machine learning algorithm Ans b	1

vi.		1
	A. Clustering & Classification B. Classification & Clustering C. Labelled & Unlabelled D. Unlabelled & Labelled Ans b	
Q3.	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	--------is a domain of AI that depicts the capability of a machine to get and analyze visual information and afterwards predict some decisions about it. a. NLP b. Data Sciences c. Augmented Reality d. Computer Vision **Ans.** Computer Vision	1
ii.	Which of the following comes under data exploration? a. System Mapping b. Sketchy Graphs c. Data Features d. Web Scrapping Ans. b	1
iii.	Reinforcement learning is based on the concept of " reward and punishment " (True / False) Ans True	1
iv.	For better efficiency of an AI project Training data should be _____ i) Relevant ii) Scattered iii) Structured iv) Authentic Choose the correct option: a) Both i and ii b) Both i and iv c) Only i d) Only iv Ans b)	1
v.	Which of the following is the type of data used by NLP applications? a) Images b) Numerical data c) Graphical data d) Text and Speech Ans d)	1
vi.	 Identify the algorithm based on the given graph a) Dimensionality reduction b) Classification c) Clustering d) Regression Ans c)	1
Q. 4	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	_____helps to analyse and interpret emotions in text data using text analysis techniques. a) Text Summarization b) Text Classification c) Sentiment Analysis d) Text Analysis Ans c)	1
ii.	Which domain of AI is used by Google Translate? a) Data Science b) Computer Vision c) NLP d) None of these Ans b)	1

iii.	Ayushi got the output from the word – studies to studi. Which process returns this kind of output from the word? a) Stemming b) Lemmatization c) Text Normalization d) Bag of words Ans a)	1
iv.	Which of the following is one of the applications of TF-IDF? a) Document Classification b) Topic Modelling c) Both a & b d) None of these Ans c)	1
v.	In __, we get the number of occurrences of each word. a) Bag of words b) Stemming c) Lemmatization d) Corpus Ans a)	1
vi.	A corpus contains 15 words. How many document vectors will be there for that corpus? a) 15 b) 1 c) 30 d) 1/15 Ans b)	1
Q. 5	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	A weather predicting AI model predicted that there is a snowfall in Srinagar. But there is no snowfall. Under which category of the confusion matrix will this be marked? a) False Positive b) False Negative c) True Positive d) True Negative Ans a)	1
ii.	Precision and Recall are used to calculate a) Precision b) Recall c) F1 Score d) Accuracy Ans c)	1
iii.	A highly complex model with many parameters gives inaccurate predictions. This is caused due to— a) Overfitting b) Outfitting c) Underfitting d) Accuracy Ans a)	1
iv.	The prediction values matches with the actual value. This is known as a) False Positive b) False Negative c) True Positive d) True Negative Ans c)	1
v.	Which of the following is correct formula to compute Recall? a) $Recall = \dfrac{TP}{TP+FN}$ c) $Recall = \dfrac{FP}{TP+FN}$ b) $Recall = \dfrac{TP}{TP+FP}$ d) $Recall = \dfrac{TP}{TN+FN}$ Ans a)	1
vi.	The sustainable development goals come into effect on 1 January 2016. When are they due to expire? a) 2025 b) 2024 C) 2029 d) 2030 Ans d)	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	What do you mean by SMART goals? Explain in short. **Ans.:** SMART goals help an individual to set goals. It stands for: S - Specific, A specific and very clear goal. M - Measurable, A goal which can be calculative like how much, how many A - Achievable, Breaking down big goal into small parts R – Realistic, Something an individual want and work toward that T –	2

Q.		Marks
	Time Bound, Goal should have timeframe to achieve	2

Q7.	Chand is confused in ABC of stress management. Explain the same for her in short.
	
	Ans.: ABC of stress management are:
	
	    A – Adversity or the stressful event
	
	    B – Beliefs of the way you respond to the event
	
	    C – Consequences or actions and outcomes of the event
		2

Q8.	Gaurav wants to prevent others from using his computer? Write any two ways to do it.
	    Gaurav can do these:
	
	    1) Create user and set a strong password for it
	
	    2) Use some security options to restrict the data access
		2

Q9.	Explain Linguistic Barrier.Linguistic Barriers The inability to communicate using a language is known as language barrier to communication Language barriers are the most common communication barriers, which cause misunderstandings and misinterpretations between people. For example, slang professional jargon and regional colloquialisms can make communication difficult.	2
Q10.	Explain different kinds of theft. Ans) (Theft: Theft means stealing of information or hardware. These maybe of three types: Physical: Where a person may steal your desktop computer or laptop. Identity: Where a hacker steals your personal information and assumes your identity. Using this false identity, the hacker can gain access to your account information or perform illegal activity. Software Piracy: This is stealing of software and includes using or distributing unlicensed and unauthorised copies of a computer program or software,	2

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

Q.		Marks
Q11.	Explain Computer Vision. Ans) it is a domain of AI that enable the computer to receive the human world as human being do it is a concept that process and analyse the image and visual data on the basis of algorithms and methods in order to analyse actual phenomena with images For example :Google Translator, facial recognisation, computer vision in retail, medical imaging	2
Q12.	In a lively senior citizens' party, a group of elderly participants engages in a game where they share amusing anecdotes from their past. To enhance the gaming experience, the organizers implement a technology that converts the spoken stories into written text in real-time. This technology aims to capture the essence of their narratives and create a lasting record of the event. Identify the AI techniques employed in this scenario. Ans The AI techniques employed in this scenario are: 1. Automatic Speech Recognition (ASR) – Converts spoken stories into written text in real-time. 2. Natural Language Processing (NLP) – Helps in understanding, structuring, and refining the transcribed text for better readability and context retention. These technologies work together to capture and document the narratives of the elderly participants effectively.	2
Q14.	Difference between Supervised Learning and Unsupervised Learning? 1. In supervised learning model the data set which is said to machine is labelled in other words we	2

can say that the data set is known to the person who is training the machine only than he is able to label the data a label is some information which can be used to tag for data it is fat with training that and algorithm and has enhancing property for example classification and regression

2. In an supervised learning model it works on unliable data set this means that the data which is better to the machine is random and there is a possibility that person is training the motor does not have an information regarding it the unsupervised learning model are used identify relationship pattern and rent out of the data which is the user in understanding about what are major features identified by the machine in it that is not labelled and it Classified on the basis of trends and pattern

Q15.	Explain Text Normalization. Ans) text normalisation helps in cleaning of detectual data in a week that it came down to the level where its complexity is lower than actual data.	2
Q16.	Write any two main concerns about AI ethics. Ans . 1. AI Bias – AI systems may reflect or amplify biases present in the data they are trained on, leading to unfair treatment of individuals or groups. This can result in discrimination in hiring, lending, law enforcement, and other critical areas. 2. AI Privacy – AI technologies process large amounts of personal data, increasing the risk of unauthorized access, data breaches, and misuse. Ensuring data protection and user privacy is a key ethical challenge in AI development.	2

<div align="center">Answer any 3 out of the given 4 questions in 50– 80 words each (4 x 3 = 12 marks)</div>

Q17.	What are the possible reasons for an AI model not being efficient? Explain Ans . Reasons of an Al model not being efficient: aLack of Training Data: If the data is not sufficient for developing an Al Model, or if the data is missed while training the model, it will not be efficient. b. Unauthenticated Data / Wrong Data: If the data is not authenticated and correct, then the model will not give good results. C Inefficient coding/Wrong Algorithms: If the written algorithms are not correct and relevant, Model will not give desired output. Not Tested: If the model is not tested properly, then it will not be efficient. d. Not Easy: If it is not easy to be implemented in production or scalable. e. Less Accuracy: A model is not efficient if it gives less accuracy scores in production or test data or if it is not able to generlize well on unseen data	4
Q18.	Differentiate between Classification and Regression algorithms with the help of their respective graphs Are Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning (DL) related to each other? If yes, how? Ans. Classification:- where data is classified according to the labels. data is discontinuous for example in the grading system students or classified on the basis of the grades the obtain with respect to the marks in the examination Regression - sach model work on continuous data data is labelled solid light representing the maping function for example if you were to predict your next salary then you would put in the data of your previous salary, any increment etc and would train the model here Yes, Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL) are related.	4

1. AI is the broadest concept, referring to the creation of systems that can perform tasks that would normally require human intelligence, like problem-solving, speech recognition, and decision-making
2. ML is a subset of AI that focuses on creating algorithms that allow systems to learn from data and improve their performance without being explicitly programmed.
3. DL is a subset of ML that uses neural networks with many layers (hence "deep") to analyze large amounts of data, often used for complex tasks like image and speech recognition.
In essence, ML is a technique used to achieve AI, and DL is a more advanced method within ML

Q19. Calculate Accuracy, Precision, Recall and F1 Score for the following Confusion Matrix on Heart Attack Risk. Also suggest which metric would not be a good evaluation parameter here and why? **4**

The Confusion Matrix	Reality: 1	Reality: 0
Prediction: 1	50	20
Prediction: 0	10	20

Ans. Accuracy: Accuracy is defined as the percentage of correct predictions out of all the observations
Accuracy = Correct Predictions / Total Cases * 100%
Accuracy = (TP + TN) / (TP + TN + FP + FN +) * 100%
Where True Positive (TP), True Negative (TN), False Positive (FP) and False Negative (FN).
Accuracy = (50+20) / (50+20+20+10) = (70*100/100) = 70%
Precision: Precision is defined as the percentage of true positive cases versus all the cases where the prediction is true.
Precision = True Positive / All Predicted Positives
Precision = TP / (TP + FP) = (50 / (50 + 20)) = (50/70) = 0.714
Recall: It is defined as the fraction of positive cases that are correctly identified
Recall = True Positive / True Positive + False Negative
Recall = TP / TP + FN = 50 / (50 + 10) = 50 / 60= 0.833
F1 score is defined as the measure of balance between precision and recall.
F1 Score = 2 * Precision * Recall / Precision + Recall
= 2 * (0.714 *0.833) / (0.714 + 0 833) = 2 * (0.594 / 1.547) = 2* (0.3839) = 0.7679
Therefore, Accuracy= 70%, Precision=0.714 , Recall=0.833, F1 Score=0.7679

Here within the test there is a tradeoff. But Recall is not a good Evaluation metric. Recall metric needs to improve more. Because, False Positive (impacts Precision): A person is predicted as high risk but does not have heart attack. False Negative (impacts Recall): A person is predicted as low risk but has heart attack. Therefore, False Negatives miss actual heart patients, hence recall metric need more improvement. False Negatives are more dangerous than false positive.

Q20. What do you mean by AI Project Cycle? What are the stages involved in AI project cycle? Explain briefly. **4**
Ans. The AI project cycle refers to the series of steps involved in developing and deploying an AI solution to solve a specific problem. It ensures a structured approach to building AI models that are effective and functional.

Stages involved in the AI project cycle:

1. Problem scoping: Clearly defining the problem that needs to be solved. This involves understanding

the business or technical objectives, identifying the requirements, and setting expectations for the AI model.

2. Data acquisition: Gathering relevant and sufficient data to train the AI model. This step may involve data collection, data integration from multiple sources, or data generation if necessary.

3. Data exploration: Cleaning and transforming the raw data into a usable format. This includes handling missing values, normalization, feature selection, and feature engineering to ensure the model has high-quality input.

4. Modelling: Choosing the appropriate AI model based on the nature of the problem. This could involve deciding between algorithms such as decision trees, neural networks, or support vector machines (SVM).

Evaluation: Assessing the model's performance using metrics like accuracy, precision, recall, or other relevant performance indicators. This is done on the test set to check how well the model generalizes.

Deployment: Deploying the model into a real-world environment, making it available for end-users or integration into existing systems.

Time:- 2 hrs.   M.M.:- 50

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    i.   This section has 05 questions.
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    i.   This section has 15 questions.
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	SECTION A: OBJECTIVE TYPE QUESTIONS	
Q. 1	**Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)**	
i.	Which of the following software acts as an interface between the user and the computer? (a) Operating System (b) MS Excel (c) Impress (d) Digital Documentation Ans. (a)	1
ii.	A student has difficulty in expressing themselves in a class discussion due to anxiety. This is an example of _____. (a) Perception barrier (b) Emotional barrier (c) Cultural barrier (d) Clarity barrier Ans. (b)	1
iii.	_____ best characterizes sustainable development. (a) Ensuring the well-being of future generations (b) Prioritizing only our own interests (c) Not do the Balancing of the well-being of ours (d) Focusing on the welfare of all Ans. (a)	1
iv.	Geetika has prepared a timetable to achieve her goal. This skill is known as_____. (a) Self-awareness (b) Responsibility (c) Adaptability (d) Time management Ans. (d)	1
v.	A customer comes to Naman's grocery outlet and starts expressing dissatisfaction about an item. Instead of getting angry, Naman listens to what his customer is saying. He is known for his _____. (a) Hard-working attitude (b) Confidence level (c) Patience (d) Willingness to embrace new ideas Ans. (c)	1
vi.	Which of these are examples of positive feedback? i. Excellent, your work has improved. Ii) I noticed your dedication to the project. iii) You are always doing it the wrong way. Iv) All of these Option a) (ii) and (iii) b) Option (i) and (ii) c) Option (i) and (iii) d) Option (i) and (iv) Ans. (b)	1
Q. 2	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	

i.	Which of the following is a fully enabled AI machine?
	
	  (a) A machine that gets trained first on the training data and then optimizes itself according to its own experiences
	
	  (b) A machine that relies on a set of predefined rules
	
	  (c) A machine that works smartly without any past data
	
	  (d) A machine that has some level of autonomy or adaptivity
	
	Ans. (a)
		1

ii.	Name the 4Ws of problem canvas under the Problem Scoping stage of the AI Project Cycle. Choose the correct option: (a) Who, What, Where, Why (b) Who, What, Where, When (c) Who, When, Why, Whom (d) Who, What, Why, Whose Ans. (a)	1
iii.	What is the main focus of Data Science? (a) Collecting data from various sources (b) Analyzing and interpreting the collected data (c) Developing databases for record maintenance (d) Only implementing artificial intelligence in data analysis Ans. (b)	1

iv.	**" Sujit, A student of standard XI with ability to regulate, measure, and understand numerical symbols, abstraction and logic anytime and anywhere."**
	The above statement refers to the concept of:
	  a) Kineasthetic Intelligence c) Spatial Visual Intelligence
	  b) Mathematical Logical Reasoning Intelligence d) Interpersonal intelligence
	Ans. (b)
		1

v.	IoT is abbreviated as a) Institute of Technology b) Internet of Things c) Index organized Table d) Inter-operability Test Ans. b)	1
vi.	In_____, the machine is trained with huge amounts of data which helps it in training itself around the data. a) Supervised Learning b) Self Learning c) Classification d) Unsupervised Learning Ans. D)	1
Q3.	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	

i.	_____helps us to summaries all the key points into one single outline so that in future, whenever there is need to look back at the basis of the problem, we can take a look at it and understand the key element of it.
	  a. 4W Problem Canvas b. Algorithm
	  c.Problem Statement Template d. Data Acquisition
	Ans. c)
		1

ii.	Q 2. The sustainable development goals come into effect on 1 January 2016. When are they due to expire? a. 2030 b. 2050 c. 2100 d. 2020 Ans. A)	1

iii.	_____ is the last stage of the AI project Life cycle.
	  a. Problem Scoping b. Evaluation c. Modeling d. Data Acquisition
	  Ans. B)
		1

iv.	___is a domain of AI that depicts the capability of a machine to get and analyze visual information and afterwards predict some decisions about it. (1) a. NLP b. Data Sciences c. Augmented Reality d. Computer Vision Ans. D)	1
v.	Which of the following comes under data exploration? a. System Mapping b. Sketchy Graphs c. Data Features d. Web Scrapping Ans. B)	1

vi.	Reinforcement learning is based on the concept of " reward and punishment " (True / False) Ans. true	1
Q. 4	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	Irrelevant training data leads to poor performance and unreliable outcomes. (True/False) Ans. True	1
ii.	Which NLP model helps in extracting features out of the text that can be helpful in machine learning algorithms? (a) Bag of Words (b) Big Words (c) Best Words (d) All of these Ans a)	1
iii.	Which of the following is not an application of NLP? (a) Voice assistant (b) Siri (c) Text generation (d) Copying text Ans. d)	1
iv.	Identify the incorrect statement from the following options: (a) Data Science is one of the domains of AI. (b) AI models can be broadly categorized into four domains. (c) Data Science is used in price comparison websites for comparing prices using machine learning algorithm. (d) The information extracted through Data Science can be used to make decisions. Ans. B)	1
v.	Which type of information is given by the **Bag of Words** algorithm? a) Type of word b) Words & its frequency c) None of these d) Number of stop words Ans. B)	1
vi.	Which channels are present in a colour image? a) G, O, R b) B, Y, G c) R, G, B d) V, R, Y Ans. C)	1
Q. 5	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
I	Statement 1: The model is a total failure when the F1 Score is 0. [1] Statement 2: The formula for F1 Score is F1 score = (3*Recall * Precision)/(Recall + Precision) a) Both the statements are correct. b) Both the statements are incorrect c) Statement 1 is correct but statement 2 is incorrect. d)Statement 1 is incorrect but statement 2 is correct. Ans. c	1
ii	Which of the following is an evaluation method? a)Accuracy b) All of these c) Precision d) Recall and F1 score Ans. b	1
iii.	Which term is used for a table that is often used to describe the performance of a classification model? a) All of these b) F1 Score c) Confusion Matrix d) Histogram Ans. c	1
iv.	Statement 1: When the predicted value was falsely predicted, it is called False Positive. Statement 2: In information retrieval, Recall is the fraction of the relevant documents to tie total documents that are successfully retrieved. a)Both the statements are incorrect b) Both the statements are correct. c) Statement 1 is correct but statement 2 is incorrect. d)Statement 1 is incorrect but statement 2 is correct. Ans . D)	1
v.	Poor precision and Poor recall refer to a) Overfitting b) Low accuracy c) Underfitting d) Low F1 Score Ans d	1

| vi. | What is the range of the F1 Score?
a)-1 to +1   b) -1 to +2
c) -1 to 0   d) 0 to +1
Ans. d | 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	What is self-awareness? Also give any two benefits of self-awareness. Ans. = Self-awareness is the ability to recognize and understand your own emotions, thoughts, and behaviors. It involves being conscious of how you affect others, your strengths and weaknesses, and your motivations. It is key to personal growth, emotional intelligence, and better decision-making. Two benefits of self awareness 1. Improved Decision-Making – Understanding your emotions and thought patterns helps you make better, more rational choices. 2. Better Relationships – Being aware of your strengths and weaknesses allows you to communicate effectively and empathize with others.	2
Q7.	List the various ways you can use to protect your data. Ans. The various ways to protect our data from theft and viruses are: (a) Use passwords to log in to your computer: Use passwords that are difficult to guess. Passwords are difficult to hack if they are a mix of small (For example 'a b c d') and capital letters (For example, 'H J E R'), numbers (For example '8 7 6 5') and special characters (For example, '% ^ # $'). This would prevent unauthorised people from using your computer. (b) Install Anti-virus and Firewall: Anti-viruses and Firewalls monitor the data coming in and out of a computer and prevent viruses from entering. Anti-viruses can also detect and clean viruses that may have entered a computer. (c) Encrypt Data: This is usually done by banks and companies in which important customer information is stored. They can encrypt their entire hard disk using the encryption feature in Windows (Bitlocker). This would force users to use a decryption password (or key) before starting the computer thus preventing unauthorised usage. (d) Secure sites: Give details of your credit card or bank account only on secure sites. See in the address bar of the browser. If the site address starts with https://and a lock symbol, then it is safe to give your credit card and bank details	2
Q8.	What are the steps you will perform to save a text file in Ubuntu? Ans. The steps to save a text file in Ubuntu are: 1) Click on the Save button. 2) The Save As dialogue box appears. 3) Browse to the Desktop folder, where you want to save a file. 4) Type the name of the file. 5) Click on Save.	2
Q9.	List the ways in which an entrepreneur affects a society. 1. Ans. The ways in which an entrepreneur affects a society are: Fulfil Customer Needs: Entrepreneurs find out what people want. Then, they use their creativity to come up with a business idea that will meet that demand. Use Local Materials: Entrepreneurs use the material and people available around them, to make	2

	products at low cost. Help Society: They make profits through activities that benefit society. Some entrepreneurs work towards saving the environment, some give money to build schools and hospitals. This way, the people and area around them becomes better. Create Jobs: With the growth of a business, entrepreneurs look for more people to help them. They buy more material, and from more people. The also hire more people to work for them. Sharing of Wealth: As entrepreneurs grow their business, the people working for them and in related businesses also grow. Lower Price of Products: As more entrepreneurs sell the same product, the price of the product goes down. For example, when more mobile phones were getting sold in India, the cost of the phone became lesser.	
Q10.	Explain interpersonal barrier. Ans. Interpersonal Barriers: Barriers to interpersonal communication occur when the sender's message is received differently from how it was intended. It is also very difficult to communicate with someone who is not willing to talk or express their feelings and views.	**2**

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

Q11.	Explain Data Science. Ans = data science is a concept of unified statistics ,data analysis , machine learning and their relate method in order to understand and analyse actual phenomena with data. Data science is an interdisciplinary field that uses scientific methods, algorithms, and systems to extract insights from structured and unstructured data.Data science is widely used in industries like healthcare, finance, marketing, and technology to solve complex problems and improve efficiency.	**2**
Q12.	In a lively senior citizens' party, a group of elderly participants engages in a game where they share amusing anecdotes from their past. To enhance the gaming experience, the organizers implement a technology that converts the spoken stories into written text in real-time. This technology aims to capture the essence of their narratives and create a lasting record of the event. Identify the AI techniques employed in this scenario. Ans= The AI techniques employed in this scenario are: 1. Automatic Speech Recognition (ASR) – Converts spoken stories into written text in real-time. 2. Natural Language Processing (NLP) – Helps in understanding, structuring, and refining the transcribed text for better readability and context retention. These technologies work together to capture and document the narratives of the elderly participants effectively.	**2**
Q13.	Mention any four applications of AI in computer vision. Ans. four applications of AI in computer vision: 1. Facial Recognition – Used in security systems, smartphones, and surveillance for identity verification. 2. Autonomous Vehicles – Helps self-driving cars detect objects, pedestrians, and traffic signals. 3. Medical Imaging – Assists in diagnosing diseases by analyzing X-rays, MRIs, and CT scans. 4. Object Detection – Used in retail, agriculture, and manufacturing for identifying and classifying objects.	**2**
Q14.	What are the two different approaches for AI modelling? Define them. Ans . Rule based approach - rule based approach refers to the AI modelling where the rules are defined by the developer. the machine follows the rules or instructions mentioned by the developer and performs its task accordingly. Example - decision tree Learning based approach- refers to ai modelling where the machine learns by itself under the learning based approach in the AI model get strained on the data set to it and then is able to design a model which is adapted to change in data. Example- supervisor learning , unsupervisor learning etc	**2**
Q15.	Write any two main concerns about AI ethics.	**2**

	Ans . 1. AI Bias – AI systems may reflect or amplify biases present in the data they are trained on, leading to unfair treatment of individuals or groups. This can result in discrimination in hiring, lending, law enforcement, and other critical areas. 2. AI Privacy – AI technologies process large amounts of personal data, increasing the risk of unauthorized access, data breaches, and misuse. Ensuring data protection and user privacy is a key ethical challenge in AI development.	
Q16.	What is inverse document frequency? Inverse Document Frequency (IDF) is a measure used in information retrieval and text mining to evaluate how important a word is within a collection of documents. It helps reduce the weight of common words while giving more importance to rare terms. A higher IDF score means the term is rare, making it more significant for distinguishing documents.	2
	Answer any 3 out of the given 4 questions in 50– 80 words each (4 x 3 = 12 marks)	
Q17.	What are the possible reasons for an AI model not being efficient? Explain Ans . Reasons of an Al model not being efficient: aLack of Training Data: If the data is not sufficient for developing an Al Model, or if the data is missed while training the model, it will not be efficient. b. Unauthenticated Data / Wrong Data: If the data is not authenticated and correct, then the model will not give good results. C Inefficient coding/Wrong Algorithms: If the written algorithms are not correct and relevant, Model will not give desired output. Not Tested: If the model is not tested properly, then it will not be efficient. d. Not Easy: If it is not easy to be implemented in production or scalable. e. Less Accuracy: A model is not efficient if it gives less accuracy scores in production or test data or if it is not able to generalize well on unseen data.	4
Q18.	Differentiate between Classification and Regression algorithms with the help of their respective graphs Are Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning (DL) related to each other? If yes, how? Ans. Classification:- where data is classified according to the labels. data is discontinuous for example in the grading system students or classified on the basis of the grades the obtain with respect to the marks in the examination Regression - sach model work on continuous data data is labelled solid light representing the maping function for example if you were to predict your next salary then you would put in the data of your previous salary, any increment etc and would train the model here Yes, Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL) are related. 1. AI is the broadest concept, referring to the creation of systems that can perform tasks that would normally require human intelligence, like problem-solving, speech recognition, and decision-making 2. ML is a subset of AI that focuses on creating algorithms that allow systems to learn from data and improve their performance without being explicitly programmed. 3. DL is a subset of ML that uses neural networks with many layers (hence "deep") to analyze large amounts of data, often used for complex tasks like image and speech recognition. In essence, ML is a technique used to achieve AI, and DL is a more advanced method within ML.	4
Q19.	Calculate Accuracy, Precision, Recall and F1 Score for the following Confusion Matrix on Heart Attack Risk. Also suggest which metric would not be a good evaluation parameter here and why?	4

The Confusion Matrix	Reality: 1	Reality: 0
Prediction: 1	50	20
Prediction: 0	10	20

Q20. What do you mean by AI Project Cycle? What are the stages involved in AI project cycle? Explain briefly. **4**

Ans The AI project cycle refers to the series of steps involved in developing and deploying an AI solution to solve a specific problem. It ensures a structured approach to building AI models that are effective and functional.

Stages involved in the AI project cycle:

1. Problem scoping: Clearly defining the problem that needs to be solved. This involves understanding the business or technical objectives, identifying the requirements, and setting expectations for the AI model.

2. Data acquisition: Gathering relevant and sufficient data to train the AI model. This step may involve data collection, data integration from multiple sources, or data generation if necessary.

3. Data exploration: Cleaning and transforming the raw data into a usable format. This includes handling missing values, normalization, feature selection, and feature engineering to ensure the model has high-quality input.

4. Modelling: Choosing the appropriate AI model based on the nature of the problem. This could involve deciding between algorithms such as decision trees, neural networks, or support vector machines (SVM).

Evaluation: Assessing the model's performance using metrics like accuracy, precision, recall, or other relevant performance indicators. This is done on the test set to check how well the model generalizes.

Deployment: Deploying the model into a real-world environment, making it available for end-users or integration into existing systems.