

HOLIDAY HOMEWORK –SCIENCE

Class: IX –A, IX C

Written Work

Chapter 2: Cell –The Building Block of Life

Page 24: Questions 1, 2, 3, 4, 9 and 10

- **Chapter 3:** Questions 8, 10 and 12
- **Chapter 4:** Questions 7, 8, 9 and 10
- **Chapter 5:** Questions 4, 7 and 13
- **Chapter 6:** Questions 10, 12, 13 and 14
- **Chapter 7:** Questions 10, 11 and 13

Practical Work

1. Identification of parenchyma, collenchyma and sclerenchyma tissues in plants.
2. Verification of the Law of Conservation of Mass.
- 3 Establishing the relation between the loss in weight of a solid when fully immersed in
 - a) Tap water
 - b) Strongly salty water with the weight of water displaced by it by taking at least two different solids.

Art-Integrated Project

Topic: Telangana

KENDRIYA VIDYALAYA NO. 1 ROORKEE HOLIDAYS HOME WORK IX MATHEMATICS

- **When a single 6-sided die is rolled, what is the total number of possible outcomes in the sample space?**
 - **Fill in the blanks.**
3. **The probability of an impossible event is _____.**
 4. **The set of all possible outcomes of a random experiment is called the _____.**
 5. **The probability of an event that is certain to happen is _____.**

6. Tossing a fair coin has a probability of _____ for getting heads.
3. Find the 10th and 26th terms of the AP
4. Which term of the AP : 21, 18, -81? 15, Also, is... 0 a term of this AP? Give reasons for your answer
5. How many 2-digit numbers are divisible by 3? What is the sum of all these 2-digit numbers ?
6. Is 1, 2, 4, 8, 16, ... a geometric sequence? common ratio? progression
7. Is 1, 3, 9, 27, 81, ... a geometric sequence? common ratio? progression
8. Find the 12th term of a GP with common ratio 2, whose 8th term is 192.
9. Find the 10th and n th terms of the GP: 5, 25, 125,
- c) Find the 31st term of an AP whose 11th term is 38 and 16th term is 73.
- d) Determine the AP whose third term is 16 and whose 7th term exceeds the 5th term by 12.
- e) Frame the converse for each of the propositions in Questions (i) - (iii)
- Then, determine if each of the two statements is true or not.
- Justify the true statements and give a counterexample for each false statement.
- (i) If a quadrilateral is a square, then all its angles are equal
- (ii) If a and b are perfect squares, then ab is a perfect square.
- (iii) If n is divisible by 24, then it is divisible by both 4 and 6.

शरदकालीन अवकाश कार्य

कक्षा नवीं

विषय हिंदी

अपठित गद्यांश

- एक अपठित गद्यांश के प्रश्नोत्तर का अभ्यास कार्य

पठित गद्यांश

- एक पठित गद्यांश के प्रश्नोत्तर का अभ्यास

कार्य

अनुच्छेद लेखन

- मेरे जीवन का लक्ष्य

पत्र लेखन

- छात्रावास में रहने वाली अपनी छोटी बहन को फैशन की ओर अधिक रुझान न रख, ध्यानपूर्वक पढ़ाई करने की सीख देते हुए पत्र लिखिए |

संवाद लेखन

- वोट मांगने आए पक्ष और ग्रामप्रधान के बीच संवाद लिखें

संदेश लेखन

2 आप सारांश हैं, आप विद्यास्थली स्कूल के छात्र संघ के सचिव हैं | ग्रीष्मकालीन अवकाश में विद्यालय में योग शिविर लगाया जाएगा, उसके लिए सूचना तैयार करें |

परियोजना कार्य -तेलंगाना राज्य पर आधारित परियोजना कार्य तैयार करें |

नोट — *शीतकालीन अवकाश कार्य लाइन वाले A4 शीट में करें तथा उसे स्टेपल करें(प्लास्टिक अथवा गत्ते की फाइल में पेपर्स न रखें) | प्रथम पृष्ठ पर स्व-परिचय लिखें |

परियोजना कार्य स्कैन बुक में करें (उदाहरण हेतु pdf भेजा जाएगा)

विषय अध्यापिका रक्षा रावत

प्रशिक्षित स्नातक शिक्षिका हिंदी

KVS
DATE / / PAGE
31

★ HOLIDAY ★ Autumn Break ★ HOMEWORK ★

1) 15/10 Chapter: 9 ⇒ The prize puzzles: What Drives the Market.
The Big Questions are, Question and activities.

2) 16/10 Let's Explore: Page number ⇒ 186. Economics chapters.
Write your Schedule.
How do you decide to spend your time? During autumn break?

3) Economics Questions and activities.

4) 17/10 Page 203 Let's explore: What happens to supply of product in case of change in cost of inputs for production, discovery or depletion resources.

5) The prize puzzle: Question and activities.

6) 18/10 Page no: 207 Let's explore: From your surrounding, list 2 goods or services that are provided by the government.

7) 19/10 Write the difference between Demand and supply? 3 marks Important Questions.

8) 20/10 (BGS-1) What economic activity taking place in a picture?
2) Which two market forces regulate the prices of
3) Why might some stalls have more customers than others?
21/10 (Vegetables): Draw the picture of this market?

4) What ~~is~~ new technology is being use by the business of Rajasthan a Gujarat.

★

Section → B.

★

9) map work:-

22/10

- (a) Takshashila. (b) chemda. (c) States of north east.
(d) Magadha. (e) Desert area of India.

23/10 10) A Vegetables Seller Notices that more ^{have started} business supplying tomatoes using improved irrigation and cold storage technology. At the same time Consumers expect prices to fall in the coming weeks. Explain how ~~these~~ these changes influence supply and demand of the market and the equilibrium prices?

★

Part → II.

★

23/10 11) The ~~is~~ dynamic ocean system. Draw Diagram.

23/10

12) Landform features by waves.

13) CBQ's → fill the famous sea ^{beaches} which is in ^{our} are country? Map work. In the political map of India.

14) Draw spring ~~and~~ tide, new tide Page no. 6 Diagram?

15) Practice Daily One map-skills.

PART-B – SUBJECT SPECIFIC SKILLS

Unit 1: AI Reflection, Project Cycle and Ethics

LEARNING OUTCOMES:

Learners will be able to

- Identify and appreciate Artificial Intelligence and describe its applications in daily life.
- Relate, apply and reflect on the Human-Machine Interactions to identify and interact with the
 - three domains of AI: Data, Computer Vision and Natural Language Processing and Undergo
 - assessment for analyzing their progress towards acquired AI-Readiness skills.
- Get familiar and motivated towards Artificial Intelligence and Identify the AI Project Cycle framework.
- Learn problem scoping and ways to set goals for an AI project and understand the iterative nature of problem scoping in the AI project cycle.
- Identify stakeholders involved in the problem scoped.
- Understand the iterative nature of problem scoping for in the AI project cycle.
- Brainstorm on the ethical issues involved around the problem selected.
- Foresee the kind of data required and the kind of analysis to be done.
- To understand the purpose of Data Visualization
- Use various types of graphs to visualize acquired data.
- Identify data requirements and find reliable sources to obtain relevant data.
- Understand various evaluation techniques.

Introduction to AI

Artificial intelligence (AI) refers to the capability of computational systems to perform tasks typically associated with human intelligence, such as learning, reasoning, problem-solving, perception, and decision-making. The term "artificial intelligence" was coined by John McCarthy in 1956.

Applications of AI

Advanced web search engines (e.g., Google Search); recommendation systems (used by YouTube, Amazon, and Netflix), virtual assistants (e.g., Google Assistant, Siri, Alexa), autonomous vehicles (e.g., Waymo); generative and creative

tools(e.g., ChatGPT , Deepseek, Grok,AI art) ,Health Care (AI driven medical imaging),Social media(personalized recommendations, content moderations, content creation),Banking(Fraud and Risk detection) ,Agriculture(AI powered tools to optimize resources use and crop management),Space explorer(safe landing of Chandrayan-III on lunar south pole).

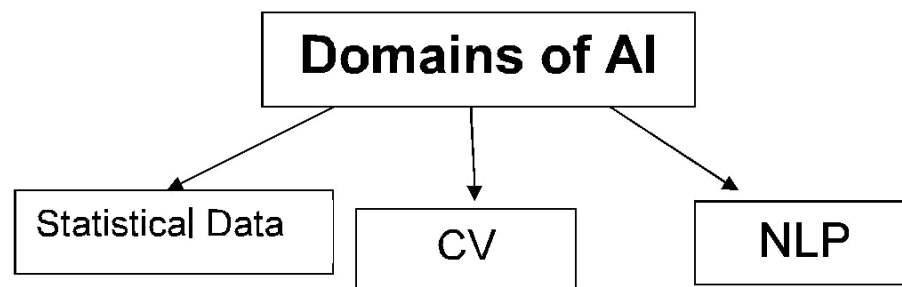
How to make machine Intelligent?

When a machine can learn, reason and adapt.

DATA+ALGORITHM=AI MACHINE

Domains of AI

specialized areas within artificial intelligence that deal with specific problems, techniques, and applications.



Statistical Data:

Statistical Data refers to statistical techniques to analyze, interpret and draw insights from numerical/tabular data

- It is the backbone of AI here the data is called bigdata (voluminous data).
- Data is derived from various sources private as well as public.
- The data is processed by analyzing patterns and trends to speculate future predictions.

Computer Vision (CV): Computer Vision, is an AI domain works with videos and images enabling machines to interpret and understand visual information.

- It uses machine learning and neural networks to enable computers and systems to understand and interpret the visual world. It replicates the complexity of human vision.
- Computer vision enables machines to "see" and interpret images, much like humans.

Natural language processing (NLP)

AI domain focused on textual data enabling machines to comprehend, generate, and manipulate human language. i.e. computers to understand human language, whether written, spoken, or even scribbled.

Some AI Applications

- **Face Lock in Smartphones**

Smartphones nowadays come with the feature of face locks in which the smartphone's owner can set up his/her face as an unlocking mechanism for it.

- **Smart assistants**

Smart assistants like Apple's Siri and Amazon's Alexa recognize patterns in speech, then infer meaning and provide a useful response.

- **Fraud and Risk Detection**

Finance companies were fed with bad debts and losses every year. However, they had a lot of data which used to get collected during the initial paperwork while sanctioning loans.

- **Medical Imaging:** For the last decades, computer supported medical imaging

application that has been a trustworthy help for physicians. It doesn't only create and analyze images, but also becomes an assistant and helps doctors with their interpretation.

AI Project Cycle

AI Project Cycle is a structured approach to developing AI solutions, involving six key stages:

- Problem Scoping
- Data Acquisition
- Data Exploration
- Modeling
- Evaluation
- Deployment

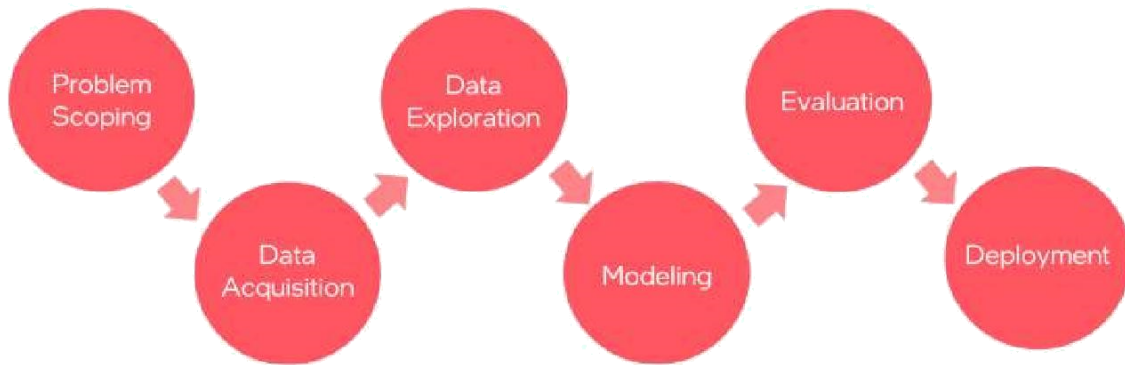
Use of AI Project Cycle

AI project cycle is the cyclical process followed to complete an AI project.

AI project cycle helps us:

- to understand the process

- to create better AI projects easily
- to create AI projects faster



1. Problem Scoping: This initial stage involves clearly defining the problem you're trying to solve, setting project goals, and identifying the key stakeholders, identifying existing measures, identifying ethical issue which will influence the project.

4W frameworks:

Who: Stakeholders (who are facing the problems and wants a solutions)

What: What is the actual problem. To collect evidence to prove that the problem actually exists.

Where: Context/situation/location of the problem.

Why: How the solution will be benefited to the society

Problem Statement Template

The Problem Statement Template helps us to summarize all the key points into one single Template so that in future, whenever there is a need to look back at the basis of the problem, we can take a look at the Problem Statement Template and understand the key elements of it.

Problem Statement Template with space to fill details according to your Goal:

Our	[stakeholders]	Who
has a problem that	[issue, problem, need]	What
when / while	[context, situation].	Where
An ideal solution would	[benefit of solution for them]	Why

2. Data Acquisition: (Acquiring Data from reliable sources)

In this stage, you collect the relevant data that will be used to train and evaluate your AI model.

Types of Data:

Training Data: collecting and preparing the data needed to train the AI model.

Testing Data: Testing data is a separate dataset used to evaluate the performance of attained model after it has been developed.

Various sources for data acquisition:

- Data can be acquired from a wide range of sources, including physical sensors, online databases, social media platforms, and even by purchasing datasets from external vendors.
- These sources can be categorized into physical sensors, online databases, and data warehouses.
- **Physical Sensors and Transducers:** These directly measure physical phenomena like temperature, pressure, and movement.
- **Online Databases:** This includes structured data stored in relational databases, APIs (Application Program Interface), and flat files.
- **Data Warehouses:** These are centralized repositories that store data from various operational systems, databases, and external sources like partner systems, IoT devices, weather apps, and social media.

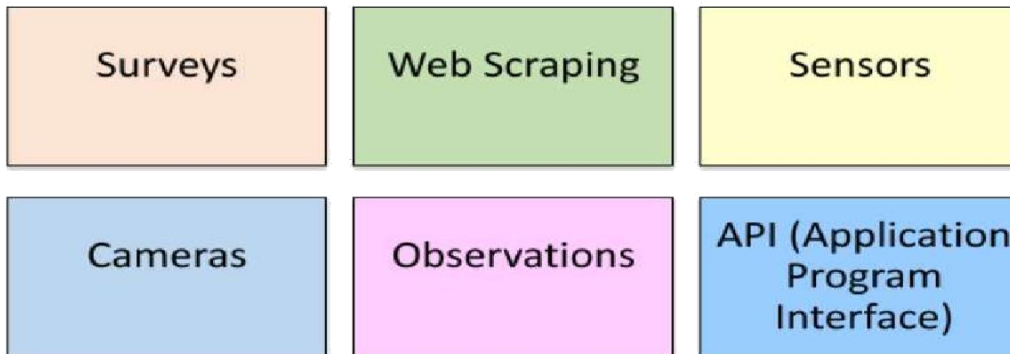
Sharing/Exchanging Data: Data can be shared or exchanged with other organizations or entities.

Public Datasets: Free datasets from government or research

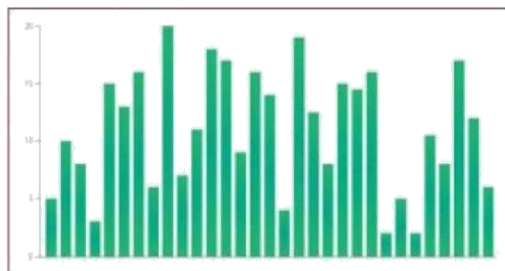
repositories can be used.

Internal Databases: Organizations can access data from their own proprietary databases or internal sources.

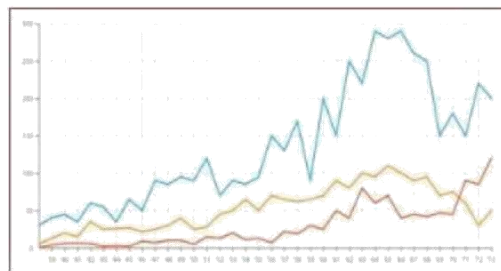
IoT Devices: Data can be acquired from IoT devices connected to operational systems.



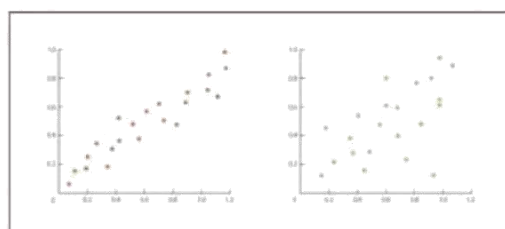
3. Data Exploration: This involves analyzing and visualizing the collected data to gain insights, understand its characteristics, and identify potential issues.



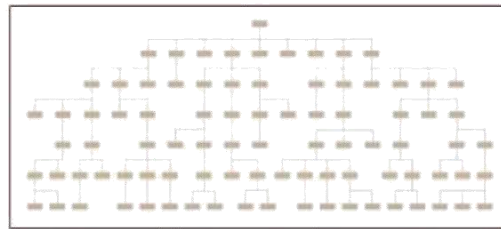
Bar Chart



Line Chart



Scatter Plot



Tree Diagram

Data visualization techniques which you learnt from :-

<https://datavizcatalogue.com>

Steps in data exploration:

Data Collection: Gathering data from various sources.

Data Cleaning: Addressing missing values, duplicates, and inconsistencies.

Data Transformation: Converting data into a suitable format for analysis.

Data Visualization: Using graphs, charts, and other visuals to explore patterns and relationships.

Statistical Analysis: Applying statistical techniques to analyze the data.

Feature Selection: Identifying relevant features for modeling.

Documentation: Documenting the data exploration process and findings

4. Modeling:

In this module, progress from data exploration to AI modeling, learning about key distinctions between Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL). The module introduces two approaches to AI modeling: Rule-Based and Learning-Based

This is the core stage where you develop and train the AI model to learn patterns from the data and make predictions or decisions using algorithms and mathematical frameworks to solve a defined problem

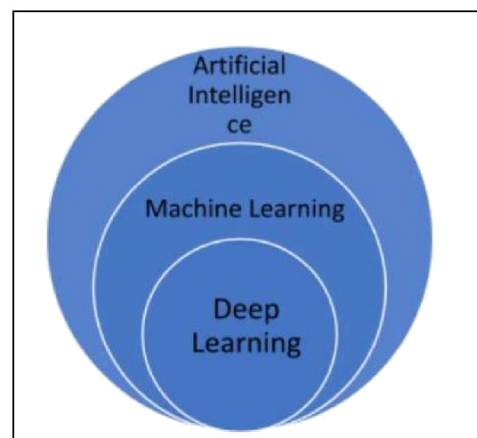
AI, ML & DL

AI (Artificial Intelligence)-refers to any technique that enables computers to mimic human intelligence. An artificially intelligent machine works on algorithms and data fed to it and gives the desired output.

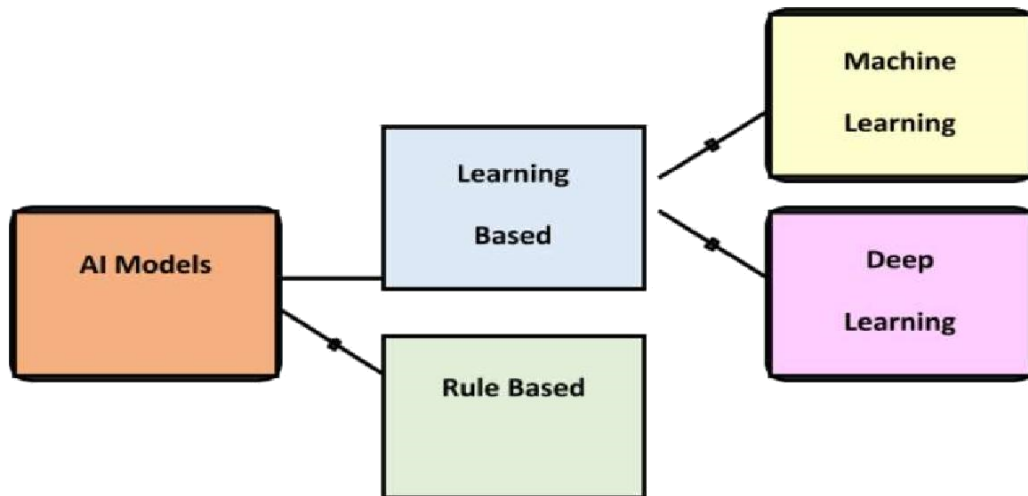
ML (Machine Learning) - Enables machines to improve at tasks with experience. The machine here learns from the new data fed to it while testing and uses it for the next iteration. It also takes into account the times when it went wrong and considers the exceptions too.

DL (Deep Learning)- Enables software to train itself to perform tasks with vast amounts of data. Since the system has got huge set of data, it is able to train itself with the help of multiple machine learning algorithms working altogether to perform a specific task.

“Artificial Intelligence is the umbrella term which holds both Deep Learning as well as Machine Learning. Deep Learning, on the other hand, is the very specific learning approach which is a subset of Machine Learning as it comprises of multiple Machine Learning algorithms.”



Generally, AI models can be classified as follows:



Rule Based Approach

Refers to the AI modeling where the rules are defined by the developer. The machine follows the rules or instructions mentioned by the developer and performs its task accordingly.

For example, we have a dataset which tells us about the conditions on the basis of which we can decide if child can go out to play golf or not.

The parameters are: Outlook, Temperature, Humidity and Wind

Rule Based AI Model

Predictors				Target
Outlook	Temp.	Humidity	Windy	Play Golf
Rainy	Hot	High	False	No
Rainy	Hot	High	True	No
Overcast	Hot	High	False	Yes
Sunny	Mild	High	False	Yes
Sunny	Cool	Normal	False	Yes
Sunny	Cool	Normal	True	No
Overcast	Cool	Normal	True	Yes
Rainy	Mild	High	False	No
Rainy	Cool	Normal	False	Yes
Sunny	Mild	Normal	False	Yes
Rainy	Mild	Normal	True	Yes
Overcast	Mild	High	True	Yes
Overcast	Hot	Normal	False	Yes
Sunny	Mild	High	True	No

Learning Based Approach

Refers to the AI modelling where the machine learns by itself. Under the Learning Based approach, the AI model gets trained on the data fed to it and then is able to design a model which is adaptive to the change in data.

1. Supervised Learning:

This type of learning uses labeled data, where each input comes with a corresponding correct output, to train a model

Examples:

Image classification: Training a model to identify different objects in images, like cats, dogs, or cars.

Spam detection: Training a model to distinguish between spam and legitimate emails.

Medical diagnosis: Training a model to identify different types of tumors in medical images.

Predicting stock prices: Training a model to predict the future price of a stock based on historical data.

2. Unsupervised Learning:

This type of learning uses unlabeled data to discover patterns and relationships within the data.

Examples:

Customer segmentation: Grouping customers with similar purchasing behaviors for targeted marketing.

Anomaly detection: Identifying unusual or suspicious patterns in data, such as fraudulent transactions.

Feature extraction: Identifying the most important features in a dataset for analysis.

Benefits of Learning-Based Approach

Flexibility: Can handle a wide range of problems and adapt to new situations.

Adaptability: Can improve its performance over time with more data.

Pattern Recognition: Can identify complex patterns and relationships in Data.

5. Evaluation:

This final stage assesses the performance of the trained model by comparing its predictions to actual results and evaluating its reliability. Evaluation is the process of understanding the reliability of any AI model, based on outputs by feeding test dataset into the model and comparing with actual answers. There can be different Evaluation techniques, depending of the type and purpose of the model.

Purpose of Evaluation

Understanding Model Performance:

Evaluation helps determine how well the AI model can solve the problem it was designed for.

Identifying Strengths and Weaknesses:

By analyzing the model's performance, you can identify areas where it excels and areas where it needs improvement.

Guiding Model Refinement:

The evaluation results can inform further adjustments to the model, such as retraining with different algorithms or adjusting parameters.

Key Evaluation Metrics:



Accuracy:

Measures the overall correctness of the model's predictions, encompassing both true positives and true negatives.

Precision:

Measures how well the model avoids false positives (incorrectly identifying something as positive when it's not).

Recall (Sensitivity):

Measures how well the model correctly identifies all positive cases, avoiding false negatives (missing positive cases).

F1-score:

Combines precision and recall, providing a balanced view of the model's performance, especially useful when dealing with imbalanced datasets.

Model Evaluation Terminologies

Imagine that you have come up with an AI based prediction model which has been deployed in a forest which is prone to forest fires. Now, the objective of the model is to predict whether a forest fire has broken out in the forest or not

Here we have two conditions (Prediction and Reality)

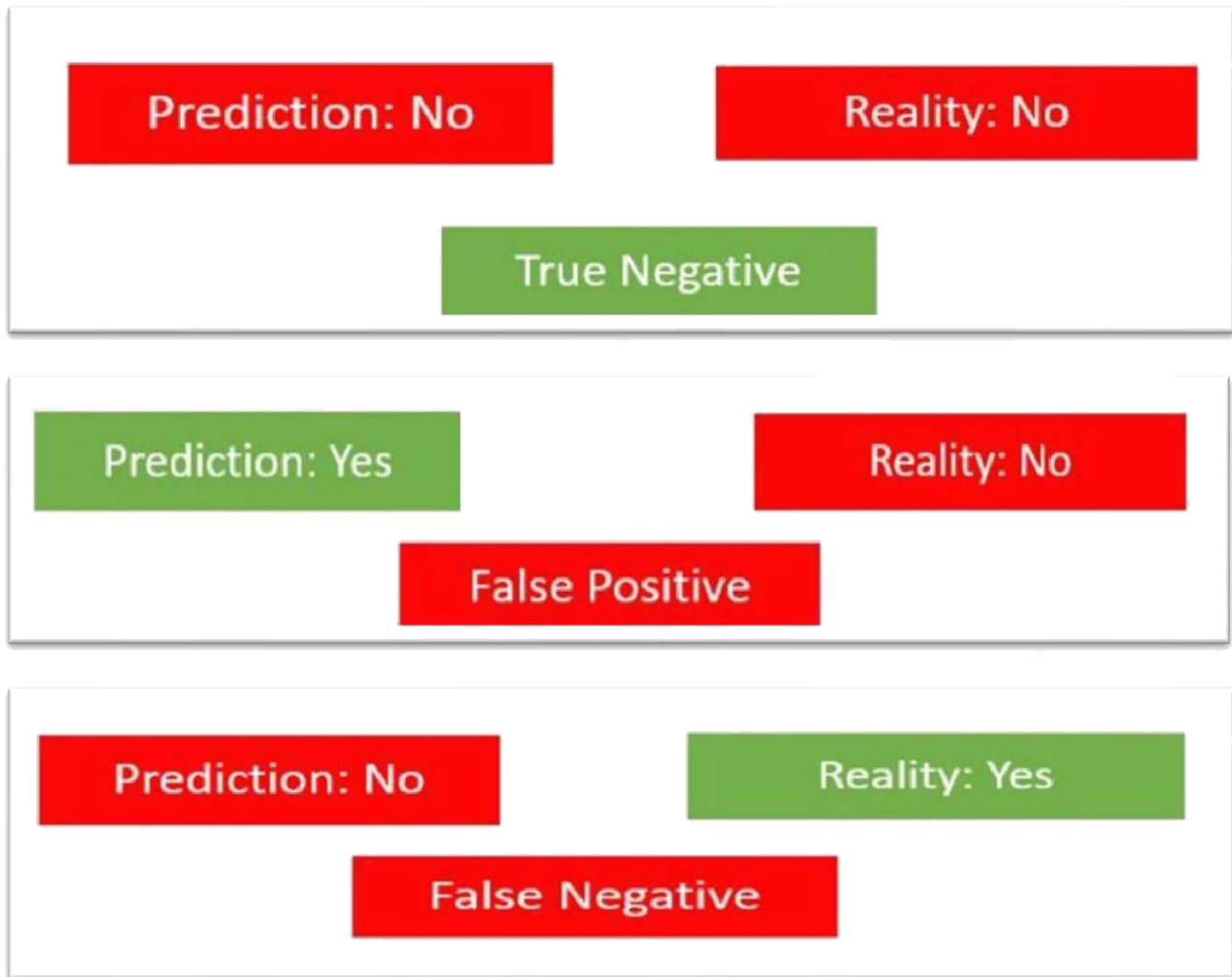
Prediction (**output** which is given by the machine) and Reality (**real scenario** in the forest when the prediction has been made)



Prediction: Yes

Reality: Yes

True Positive



- True Positives (Correct Positive Predictions)
- True Negatives (Correct Negative Predictions)
- False Positives (Incorrectly Predicted Positives)
- False Negatives (Incorrectly Predicted Negatives)

6. Deployment

Deployment as the final stage in the AI project cycle where the AI model or solution is implemented in a real-world scenario.

Key steps involved in the deployment process:

- a. Testing and validation of the AI model
- b. Integration of the model with existing systems
- c. Monitoring and maintenance of the deployed model.

Some examples of successful AI projects that have been deployed in various industries, such as self-driving cars, medical diagnosis systems, and chatbots.

AI ETHICS

Refers to the principles that guide the development and use of AI systems to ensure they are beneficial, safe, and responsible. These principles consider fairness, transparency, accountability, privacy, security, and potential societal impacts of AI.

Difference between ethics and morals:

- Ethics generally refers to societal rules and standards, while morals are more about personal beliefs and values
- Ethics are external, while morals are internal (Ethics are often enforced by legal or organizational sanctions, while morals are more personal).

Examples:

Moral: A business owner choosing to donate a portion of their profits to charity because they believe in giving back to the community.

Ethics: A business owner to donate some percentage of his profit under CSR (Company Social Responsibility)

Ethics can include avoiding bias, ensuring privacy of users and their data, Inclusion and environmental risks.

Ethics vs Morals

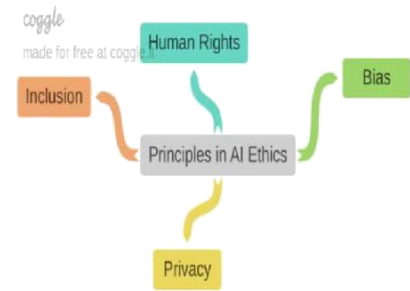
Morals	Ethics
• The beliefs dictated by our society. • Morals are not fixed and can be different for different societies Examples: • Always speak the truth • Always be loyal • Always be generous	• The guiding principles to decide what is good or bad. • These are values that a person themselves chooses for their life Examples: • Is it good to speak the truth in all situations? • Is it good to be loyal under all circumstances? • Is it necessary to always be generous?

Principles in AI Ethics

To make AI better, we need to identify the factors responsible for it.

The following principles in AI Ethics affect the quality of AI solutions

Here are a few things that you should take care of :



Human Rights

- Does your AI take away Freedom?
- Does your AI discriminate against People?
- Does your AI deprive people of jobs?
- What are some other human rights which need to be protected when it comes to AI?

Bias

- Does your data equally represent all the sections of the included populations?
- Will your AI learn to discriminate against certain groups of people?
- Does your AI exclude some people?
- What are some other biases that might appear in an AI?

Privacy

- Does your AI collect personal data from people?
- What does it do with the data?
- Does your AI let people know about the data that it is collecting for its use?
- Will your AI ensure a person's safety? Or will it compromise it?
- What are some other ways in which AI can breach someone's privacy?

Inclusion

- Does your AI collect personal data from people?
- What does it do with the data?
- Does your AI let people know about the data that it is collecting for its use?
- Will your AI ensure a person's safety? Or will it compromise it?
- What are some other ways in which AI can breach someone's privacy?

Ethical scenarios faced while building AI solutions:

Scenario 1: If a driverless car finds someone crossing the road, takes a turn to avoid hitting the person and instead smashed the car in a wall / tree nearby causing serious injury to the passengers, is it a fault in the development on moral ground.

Scenario 2: If any Automated or Driverless Car hits someone standing in the middle of a road, who needs to be held responsible; whom should be penalized

AI bias

The biased mentality of the developers may result in the presence of bias in the AI System. Bias might not be negative always but it may reflect the social norms and common facts.

AI bias can develop due to the data used to train the AI

Examples of AI bias:

All the virtual assistants have a female voice.

- If searching is done for Salons on Google, the resultant list mostly contains female salons.
- Searching for images of Nurse gives the pictures of female nurses mostly.

Some recent examples of AI bias?

- Racial AI Bias in the U.S. Healthcare

They discovered that a widely used healthcare algorithm, affecting over 200 million patients in U.S. hospitals, significantly favored white patients over Black patients when predicting who needed extra medical care.

AI Access

- AI Access refers to the ability to securely and appropriately use artificial intelligence tools and applications.
- Since AI Systems are emerging technology and expensive, all cannot get access to AI and get benefitted. Ex-people belong to EWS may not be benefitted from AI
- AI may create unemployment if not implemented carefully and with compassion.

MULTIPLE CHOICE QUESTIONS

Q1. What is one purpose of AI in healthcare?

- a) To replace doctors b) To assist in the interpretation of medical images
- c) To automate physical therapy d) To develop new medications

Q2. What is the function of smart assistants like Alexa and Siri?

- a) To answer all mathematical questions
- b) To recognize speech patterns and provide responses
- c) To function as a calculator
- d) To guide physical robots

Q3. In AI, what does the term “modelling” refer to?

- a) Designing a physical model
- b) Creating algorithms that can predict outcomes
- c) Drawing pictures
- d) Painting a model

Q4. What is the purpose of the AI Project Cycle?

- a) To predict future trends in technology
- b) To guide AI development from problem scoping to deployment
- c) To monitor AI performance after deployment
- d) To collect data from the internet

Q5. Which stage in the AI Project Cycle involves gathering data?

- a) Problem Scoping b) Data Acquisition
- c) Modelling d) Evaluation

Q6. What is problem scoping in AI?

- a) Defining the problem that AI is supposed to solve
- b) Testing the AI model
- c) Training data collection
- d) Evaluating AI performance

Q7. Which type of AI approach adapts its algorithms based on new data?

- a) Rule-Based AI b) Learning-Based AI
- c) Fixed AI d) Reactive AI

Q8. What does the term “evaluation” mean in AI?

- a) Writing new algorithms
- b) Testing AI models against a dataset to check accuracy
- c) Creating data features
- d) Monitoring users

Q9. What is the final stage of the AI Project Cycle?

- a) Problem Scoping
- b) Data Acquisition
- c) Evaluation
- d) Deployment

Q10. Spam filter is an application of _____.

- a) Natural Language Processing
- b) Data Science
- c) Computer Vision
- d) Segmentation

Q11. Searching for a Chef's photo in the web browser mostly give men's images.

This is an instance of _____.

- a) AI Access b) AI Bias c) AI Domain d) AI Ethics

Q12. Choose the five stages of AI project cycle in correct order:

- a) Evaluation -> Problem Scoping -> Data Exploration -> Data Acquisition -> Modelling->Deployment
- b) Problem Scoping -> Data Exploration -> Data Acquisition -> Evaluation -> Modelling->Deployment
- c) Data Acquisition -> Problem Scoping -> Data Exploration -> Modelling ->Evaluation->Deployment
- d) Problem Scoping -> Data Acquisition -> Data Exploration -> Modelling ->Evaluation->Deployment

Q13. Which of the following is not a correct method of Data Collection?

- a) Survey b) Prediction c) Observation d) API

Q14. Which one of these is a game that uses AI to understand language?

- a) Quick Draw b) Semantris c) Tetris d) Chess

Q15.How is AI used in self-driving cars?

- a) It generates energy
- b) It processes visual data and makes driving decisions
- c) It repairs the engine
- d) It calculates fuel efficiency

Q16.Which of the following AI domains involves learning from data to improve over time?

- a) Computer Vision b) Deep Learning
c) Natural Language Processing d) Data Mining

Q17. What does it mean for an AI model to “learn”?

- a) It memorizes data
- b) It improves its performance using data and experience
- c) It processes large amounts of information
- d) It executes tasks faster than humans

Q18.What should you check before using personal data in AI?

- a) If it's from a private company
- b) If it is publicly available or obtained ethically
- c) If the data is stored in a database
- d) If it was collected automatically

Q19 and 20 are ASSERTION AND REASONING based questions.

Mark the correct choice as

- (a) Both A and R are true and R is the correct explanation for A
(b) Both A and R are true and R is not the correct explanation for A
(c) A is True but R is False
(d) A is false but R is True

Q19. Assertion(A) : Rule based AI model is a static model.

Reasoning(R): Rule based model can evolve over changing data set.

Q20. Assertion(A): Dimension Reduction is used in higher dimension problems.

Reasoning(R): Reducing dimension of a problem causes huge data loss.

Answers:

1-b	2-b	3-b	4-b	5-b	6-a	7-b	8-b	9-d	10-a
11-b	12-d	13-b	14-b	15-b	16-b	17-b	18-b	19-c	20-b

SHORT ANSWER QUESTIONS

Q1. How can AI be used as a tool to transform the world into a better place?

Ans: AI can be used to make the world better by improving productivity, healthcare, education, and accessibility. AI systems can predict and solve critical problems like climate change, help optimize resource use, enhance medical diagnosis with Computer Vision and NLP, improve personalized education, and increase efficiency in various industries. AI can also aid in monitoring environmental changes and managing large-scale social challenges like poverty and food security.

Q2. Applications in smartphones that widely use Computer Vision:

- Face Unlock
- Google Lens
- Augmented Reality filters in social media apps (like Snapchat, Instagram)
- Barcode and QR code scanners
- Image search in photo galleries.

Q3. Difference between the three domains of AI with respect to the types of data they use:

- Natural Language Processing (NLP): Works with textual and spoken data to understand, generate, and manipulate human language.
- Computer Vision (CV): Works with visual data, including images and videos, to help machines interpret and understand visual content.
- Data Science: Works with numerical, statistical, and structured data to identify patterns and draw insights from large datasets.

Q4. How is an AI project different from an IT project?

An AI project focuses on building models that can learn and improve over time based on data, whereas an IT project is more static and involves creating software systems based on fixed rules and requirements. AI projects emphasize adaptability and continuous learning, while IT projects prioritize system functionality and efficiency.

Q5. Name various methods for collecting data.

- Surveys: Used in customer sentiment analysis.
- Sensors: Used in smart agriculture to monitor environmental conditions.
- Web scraping: Used for gathering publicly available data from websites (e.g., market trends).
- APIs: Used in financial applications to collect real-time stock market data.

Q6. What must you keep in mind while collecting data so it is useful?

Ensure that the data is relevant, accurate, unbiased, and obtained from reliable sources. The data should also comply with privacy laws and be suitable for training AI models.

Q7. Explain Data Privacy:

Data privacy refers to the ethical handling of individuals' personal data. It involves ensuring that personal information is collected, stored, and used responsibly, with the consent of the individual, and safeguarding against misuse. AI systems that handle personal data, such as biometric information or social media activity, must follow strict privacy regulations to protect users' rights.

Q8. How should AI system maintain privacy of user data?

- a) Restrict data collection to what is strictly necessary.
- b) Secure data by identifying risk, stop misuse or leakage of data with encryption and password protection.
- c) Take permission from user while collecting their personal information and clearly state their usage. Provide control to user over their individual information.

Q9. Difference between Rule base approach and Learning Based Approach

Rule base approach	Learning 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.	Refers to the AI modelling where the machine learns by itself. Under the Learning Based approach, the AI model gets trained on the data fed to it and then is able to design a model which is adaptive to the change in data

Q10. Explain the concept of 4W's problem canvas

4W Problem Canvas is a Problem Scoping framework prepared to understand scope of the project and prepare Problem Statement Template. It has 4 components – who, what, where, why

Who are the stakeholders facing the problem and need solution?

What is the nature of the problem and its severity?

Where is the Location, Context, Situation and Frequency of the problem?

Why is the problem occurring?

LONG ANSWER TYPE QUESTIONS

Q1. Define AI, ML and DL. Also state the relation among them.

AI- refers to any technique that enables computers to mimic human intelligence. An artificially intelligent machine works on algorithms and data fed to it and gives the desired output.

ML- Enables machines to improve at tasks with experience. The machine here learns from the new data fed to it while testing and uses it for the next iteration.

It also takes into account the times when it went wrong and considers the exceptions too.

DL- Enables software to train itself to perform tasks with vast amounts of data. Since the system has got huge set of data, it is able to train itself with the help of multiple machine learning algorithms working altogether to perform a specific task

$$AI > ML > DL$$

Q2. Training Data VS Testing Data

Training Data		Testing Data	
i.	Used to train the machine learning model	i.	Used to test performance of a trained model
ii.	Input to the system	ii.	Outcome from a system
iii.	Larger data set for better knowledge and accuracy	iii.	Smaller data set obtained after evaluation

Q3. What do you mean by AI access explain with Example

AI Access

- AI Access refers to the ability to securely and appropriately use artificial intelligence tools and applications.

- Since AI Systems are emerging technology and expensive, all cannot get access to AI and get benefitted. Ex-people belong to EWS may not be benefitted from AI
- AI may create unemployment if not implemented carefully and with compassion.

Q4. Explain Principle of AI Ethics

To make AI better, we need to identify the factors responsible for it. The following principles in AI Ethics affect the quality of AI solutions.

Here are a few things that you should take care of

Human Rights

- Does your AI take away Freedom?
- Does your AI discriminate against People?

Bias

- Does your data equally represent all the sections of the included populations?
- Will your AI learn to discriminate against certain groups of people?

Privacy

- Does your AI collect personal data from people?
- What does it do with the data?

Inclusion

- Does your AI collect personal data from people?
- What does it do with the data?

Q5. Explain Steps in NLP:

1. Lexical Analysis:

This step breaks down text into individual words (tokens) and identifies their grammatical structure, including parts of speech. It's like identifying the building blocks of language.

2. Syntactic Analysis (Parsing):

This step analyzes the grammatical structure of sentences, identifying relationships between words and phrases. It ensures the sentence is grammatically correct and helps understand the sentence's structure.

3. Semantic Analysis:

This step focuses on the meaning of words and sentences, determining the

intended meaning in context. It also considers the context of the sentence and the overall meaning.

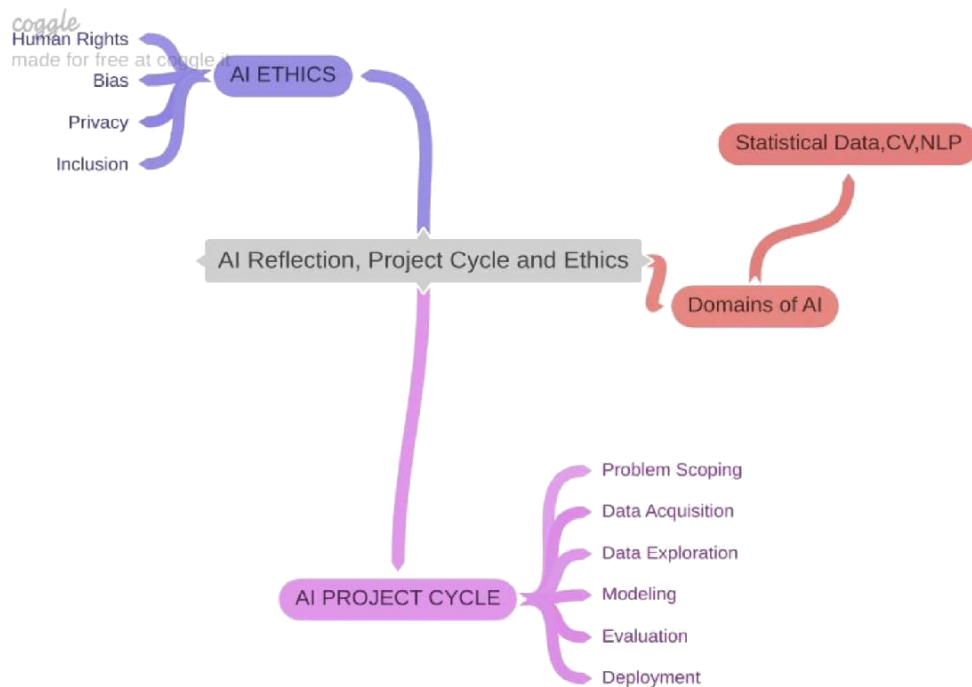
4. Discourse Integration:

This step considers the relationship between sentences, helping to understand the flow of ideas and the overall meaning of a larger text. It helps to understand how different sentences relate to each other.

5. Pragmatic Analysis:

This step considers the context in which the text is used, including the speaker, listener, and the purpose of the communication. It helps to understand the intended meaning beyond the literal words.

MIND MAP





PM SHRI KENDRIYA VIDYALAYA NO. 1, ROORKEE



AUTUMN BREAK ASSIGNMENT

CLASS IX | ENGLISH | SESSION 2026–27

1 REPORTED SPEECH



Convert into reported speech:

- Riya said, "I am preparing for my exams."
- The teacher said to the students, "Complete your work on time."
- He asked me, "Where do you live?"
- Mother said to me, "Please help your younger brother."
- Siya said, "I watched a documentary last night."

2 NOTICE WRITING



Write a notice in about 50 words on any ONE topic:

- Inter-House Sports Competition
- English Storytelling Competition

Include the following in your notice:

School name, NOTICE, date, heading, details, signature, name and designation.

3 LETTER WRITING



Write any ONE letter in 120–150 words:

- To the Municipal Officer about garbage and poor sanitation in your locality.
- To your friend describing an inspiring person who has taught you an important life lesson.

Follow the correct format and use suitable language.

4 NCERT KAVERI — QUESTION ANSWERS



Read and answer questions from Units 1–5:

- How I Taught My Grandmother to Read — What does the story teach us about learning and determination?
- The Pot Maker — Describe the pot maker's skill and the importance of traditional crafts.
- Winds of Change — Explain the changes and ideas presented in the lesson.
- Vitamin-M — What is the central message of the lesson?
- The World of Limitless Possibilities — What can we learn from Dr Deepa Malik's journey?

Poems:

Bharat Our Land; Gifts of Grace: Honouring Our Vocations; Canvas of Soil; I Cannot Remember My Mother; Nine Gold Medals.

Write the central idea of any TWO poems.

5 CREATIVE TASK

Create a small infographic on "Ability, Inclusion and Teamwork", inspired by The World of Limitless Possibilities and Nine Gold Medals.



GENERAL INSTRUCTIONS

- Complete all work neatly in your English notebook.
- Write answers in your own words and use complete sentences.
- Revise the textbook chapters and check spelling and punctuation.



SUBMISSION:

First working day after the autumn break.

