D. Answer the questions in 20-30 words each.

1. Type of Intelligence:

The described intelligence is Naturalistic Intelligence, as it focuses on understanding the natural world, identifying variations in species, and recognizing environmental changes.

2. Machine Learning Definition & Applications:

Machine Learning is a subset of AI enabling systems to learn from data without explicit programming. Applications include image recognition (e.g., facial recognition in smartphones) and recommendation systems (e.g., Netflix suggestions).

3. Artificial Intelligence Definition:

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines, allowing them to perform tasks like problem-solving, learning, decision-making, and understanding language.

4. AI, ML, DL Difference:

AI is the broad concept of intelligent machines. Machine Learning (ML) is a method for achieving AI by learning from data. Deep Learning (DL) is a subset of ML using neural networks with multiple layers to learn complex patterns.

5. AI Applications in Everyday Life:

AI is used in virtual assistants (e.g., Siri, Alexa) for voice commands and information retrieval, and in navigation apps (e.g., Google Maps) for route optimization and traffic predictions.

6. Computer Vision in Autonomous Vehicles:

Computer Vision enables autonomous vehicles to "see" and interpret their surroundings by processing visual data from cameras, allowing for object detection (pedestrians, other vehicles), lane keeping, and traffic sign recognition.

7. AI's Role in Healthcare:

AI aids in disease diagnosis by analyzing medical images (e.g., X-rays, MRIs) for anomalies and in drug discovery by accelerating the identification of potential drug candidates and predicting their efficacy.

8. AI Bias & Impact on Decision-Making:

AI bias occurs when algorithms produce unfair outcomes due to biased training data or flawed design. This can lead to discriminatory decisions in areas like loan applications, hiring, or criminal justice.

9. AI Ethics Definition:

AI ethics is a field studying the moral principles and values that should guide the design, development, deployment, and use of AI systems to ensure they are fair, transparent, accountable, and beneficial to society.

10. AI Violating Human Rights:

AI can violate human rights through biased facial recognition leading to wrongful arrests or surveillance systems infringing on privacy and freedom of expression.

11. Identifying AI-based Machine/Application:

A machine/application is AI-based if it exhibits learning, reasoning, or problem-solving capabilities without explicit human programming for every scenario, e.g., a chatbot understanding and responding to natural language queries.

12. Image Search Concern (Beaches):

The concern is filter bubbles or algorithmic bias, where search engines prioritize popular or personalized results, potentially limiting exposure to diverse options and perpetuating stereotypes or commercial interests.

13. AI for Ethical Concerns & Social Good:

AI can address ethical concerns and promote social good by optimizing resource allocation for environmental conservation (e.g., monitoring deforestation) and improving healthcare access through remote diagnostics.

14. Importance of Data Privacy in AI:

Data privacy is crucial in AI to protect individuals' sensitive information from misuse, unauthorized access, and algorithmic discrimination, building trust and ensuring ethical data handling.

15. Ethical Considerations for AI-generated Content & Misinformation:

Ethical considerations include preventing the spread of misinformation and malicious content. Measures include content moderation, fact-checking mechanisms, and clear labeling of AI-generated material.

E. Answer the questions in 50-80 words each.

1. Howard Gardner's Types of Intelligences:

Howard Gardner proposed multiple intelligences including: Linguistic (e.g., writers), Logical-Mathematical (e.g., scientists), Spatial (e.g., architects), Bodily-Kinesthetic (e.g., dancers), Musical (e.g., musicians), Interpersonal (e.g., leaders), Intrapersonal (e.g., philosophers), and Naturalistic (e.g., environmentalists).

Domains of AI:

AI encompasses various domains: Machine Learning (enabling systems to learn from data), Natural Language Processing (NLP) for human-computer language interaction, Computer Vision for visual interpretation, Robotics for physical interaction, and Expert Systems for decision-making based on rules and knowledge.

3. Real-life Applications & Impact of NLP:

NLP applications include virtual assistants, sentiment analysis in customer feedback, and language translation tools. NLP significantly impacts human-computer interaction by enabling more natural communication and improving accessibility across language barriers.

4. Impact of AI Bias on Decision-making:

Biases in AI algorithms, often stemming from unrepresentative training data, can lead to unfair or discriminatory decision-making processes. For example, biased hiring algorithms might disproportionately exclude certain demographics, resulting in inequitable outcomes and limiting opportunities for individuals or groups.

5. Data Science in Fraud Detection:

Data science plays a vital role in fraud detection in banking by analyzing large datasets of financial transactions to identify unusual patterns and anomalies indicative of fraudulent activity. Machine learning models are trained on historical data to predict and flag suspicious transactions, minimizing financial losses and enhancing security.

6. Ethical Challenges in AI (Bias & Transparency):

Ethical challenges in AI, particularly regarding bias and transparency, require careful attention. AI bias can lead to discriminatory outcomes, necessitating diverse datasets and rigorous testing. Transparency challenges involve understanding how AI models make decisions, crucial for accountability and building trust, addressed through explainable AI techniques.

7. Ethical Implications of AI in Autonomous Weapons:

The ethical implications of AI in autonomous weapons are profound, raising concerns about accountability for harm, the potential for unintended escalation, and the erosion of human control over life-and-death decisions. This area necessitates international regulations and robust ethical frameworks to ensure responsible development and deployment.