ASSIGNMENT

ARTIFICIAL INTELLIGENCE

ANSWER KEY

1. Outline the main steps in the AI Project Cycle briefly:

The AI Project Cycle consists of the following steps:

1. Problem Scoping – Understand and define the problem.

2. Data Acquisition – Gather relevant and sufficient data.

3. Data Exploration – Clean, visualize, and analyze the data.

4. Model Building – Train and test AI models using algorithms.

5. Evaluation – Check the model's performance.

6. Deployment – Implement the model in a real-world environment.

2. What roles does computer vision play in agricultural monitoring systems?

Computer vision plays multiple roles in agriculture, such as:

Detecting pests and diseases in crops.

Monitoring plant growth and health using drone/satellite images.

Estimating crop yield.

Identifying weeds for precision spraying.

Ensuring quality control in post-harvest sorting and packaging.

3. Mention the factors which knowingly or unknowingly influence our decision-making.

Factors influencing decision-making include:

Cognitive biases (e.g., confirmation bias).

Cultural background and upbringing.

Emotions and mood.

Peer pressure or social influence.

Personal values and beliefs.

Past experiences.

Media and advertisements.

4. What is the necessity for Ethical Frameworks in AI development?

Ethical frameworks are necessary to:

Ensure fairness and avoid bias in AI decisions.

Protect privacy and user data.

Promote transparency and accountability.

Prevent misuse of AI technologies.

Uphold human dignity and autonomy.

Build trust in AI systems.

5. Mention the key characteristics of sector-based frameworks.

Key characteristics of sector-based frameworks include:

Customization according to industry needs.

Regulatory alignment with sector-specific laws.

Focus on stakeholder impact, such as consumers or patients.

Clear ethical guidelines tailored for each domain (e.g., healthcare, finance).

Encouragement of innovation while maintaining responsibility.

6. What do you mean by Bioethics?

Bioethics is the study of ethical issues and moral dilemmas in medical and biological sciences. It deals with questions related to:

Genetic engineering

Organ transplantation

End-of-life care

Clinical trials

Human and animal research

It aims to balance scientific progress with respect for human rights and dignity.

7. What is Natural Language Processing? Explain any two real-life applications of NLP.

Natural Language Processing (NLP) is a branch of AI that enables machines to understand, interpret, and generate human language.

Two real-life applications:

1. Chatbots and Virtual Assistants – Like Siri, Alexa, or customer support bots.

2. Language Translation – Google Translate or real-time translation apps.

8. How do value-based frameworks contribute to ethical decision-making by emphasizing fundamental principles and values?

Value-based frameworks contribute by:

Encouraging decisions based on core ethical values like honesty, fairness, and respect.

Promoting human-centric approaches that consider well-being and dignity.

Helping stakeholders navigate dilemmas by reflecting on shared principles.

Supporting transparency and accountability in processes.

Guiding organizations to act in a socially responsible and morally sound manner.