Ethical AI – Short Answer & Matching Questions

1. Short Answer Questions

Q1: Define algorithmic bias and provide two examples of how it manifests in AI systems.
Definition: Algorithmic bias occurs when an AI system produces unfair, prejudiced, or systematically skewed outcomes due to biased data, flawed model design, or unrepresentative training inputs.
Examples:
1. Facial Recognition: Some systems have higher error rates for darker-skinned or female faces because they were trained mostly on images of lighter-skinned males.
2. Hiring Algorithms: Automated recruitment tools may favor male candidates if trained on historical hiring data where men were disproportionately selected.

Q2: Explain the difference between transparency and explainability in AI. Why are both important?
Transparency refers to the openness about how an AI system is built and functions—its data sources, algorithms, and design processes.
Explainability is the ability to clearly describe why an AI system made a particular decision or prediction.
Importance: Transparency builds trust and accountability by allowing scrutiny of AI processes. Explainability ensures understanding and ethical decision-making, helping users and regulators verify that outcomes are fair and justified.

Q3: How does GDPR (General Data Protection Regulation) impact AI development in the EU?
GDPR affects AI by enforcing strict rules on data privacy and user consent. Key impacts include:
• Right to Explanation: Users can request clarification on automated decisions affecting them.
• Data Minimization: AI systems must collect and use only necessary personal data.
• Accountability: Developers must implement data protection by design and document compliance.
This encourages more ethical and transparent AI development across the EU.

2. Ethical Principles Matching

Principle	Definition
A) Justice	Fair distribution of AI benefits and risks.
B) Non-maleficence	Ensuring AI does not harm individuals or society.
C) Autonomy	Respecting users' right to control their data and decisions.
D) Sustainability	Designing AI to be environmentally friendly.