1. Short Answer Questions

Q1: Define algorithmic bias and provide two examples of how it manifests in AI systems.

Algorithmic bias refers to systematic and unfair discrimination in the outcomes of an AI system, often due to biased training data or flawed model design.

Example 1: A hiring algorithm that was trained on historical company data may favor male candidates over equally qualified female candidates if past hires were biased.

Example 2: A facial recognition system that performs poorly on darker-skinned individuals because the training data lacked diversity in skin tones.

Q2: Explain the difference between transparency and explainability in AI. Why are both important?

Transparency is about how much information is openly shared about an AI system — including its data sources, algorithms, and decision-making processes.

Explainability is the degree to which a human can understand why an AI system made a specific decision.

Why both matter:

Transparency builds trust and accountability. Explainability ensures users, regulators, and developers can interpret decisions, detect errors, and ensure fairness — especially in high-stakes domains like healthcare or finance.

Q3: How does GDPR (General Data Protection Regulation) impact AI development in the EU?

The GDPR enforces strict rules on how personal data is collected, processed, and stored. For AI systems, this means:

Data must be collected with consent and used responsibly.

Users have the "right to explanation" for decisions made by automated systems.

It restricts automated decision-making without human intervention in some cases.

Overall, it promotes ethical, transparent, and privacy-preserving AI development in the EU.

2. Ethical Principles Matching

| Principle | Definition |
|---|---|
| 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. |
| A) Justice | Fair distribution of AI benefits and risks. |