Part 1: Theoretical Analysis

Q1: Edge AI Reducing Latency and Enhancing Privacy

Edge AI processes data locally, reducing latency and protecting sensitive data. Example: autonomous drones.

Q2: Quantum AI vs Classical AI

Quantum AI uses quantum bits to solve optimization problems faster. Industries: healthcare, logistics, finance.

Q3: Human-AI Collaboration in Healthcare

AI assists radiologists and nurses by automating diagnostics and monitoring, improving care delivery.

Case Study: AI-IoT in Smart Cities

AI-IoT integration improves urban sustainability via traffic optimization. Challenges: data security, interoperability.

Part 2: Practical Implementation

Task 1: Edge AI Prototype

Trained a MobileNetV2 classifier for recyclables. Converted to TFLite. Benefits: low latency, privacy, offline use.

Task 2: AI-Driven IoT Concept

Designed a smart agriculture system using sensors and a regression model. Created a data flow diagram.

Task 3: Ethics in Personalized Medicine

Bias arises from underrepresented groups. Fairness strategies include diverse data and bias audits.

Part 3: Futuristic Proposal

AI-Powered Ocean Cleanup Swarms

AI drones to detect and collect marine plastic. Workflow: image input, CNN, navigation RL, output collection.

Bonus Task: Quantum Simulation

IBM Qiskit Quantum Circuit

Simulated 2-qubit circuit. Application in AI optimization for drug discovery and genomics.