

Mark Scheme Criteria

Examiners must apply positive marking only. Do not deduct any marks for incorrect responses. Provide marks in line with this scheme only.

Response(s) must be in line with prescribed marking indicators shown below. Variation is permissible only with prior acknowledgment from Chief Examiner.

Where learner responses do not align with the suggested response, examiners can use best judgement. Where this occurs, the examiner must flag this response for enhanced moderation by the Chief Examiner

AO1: Knowledge & Understanding – 60% (48 marks)

AO3: Analysis & Evaluation – 40% (32 marks)

Section A: Short Structured Questions (30 marks)

Q1. Classical vs Sub-symbolic AI (10 marks)

a) Symbolic method (e.g., expert systems) (2 marks – AO1)

Sub-symbolic method (e.g., neural networks) (2 marks – AO1)

b) Strengths/limitations:

- Interpretability comparison (2 marks – AO3)
- Suitability for complex tasks (2 marks – AO3)
- Use of real-world examples (2 marks – AO3)

Q2. Neural Architectures (10 marks)

a) Clear difference between CNNs and RNNs

- CNNs for spatial data (e.g., images) (3 marks – AO1)
- RNNs for sequential data (e.g., text/time-series) (3 marks – AO1)

b) Appropriate example for each (e.g., CNNs for image classification, RNNs for sentiment analysis) and justification (2 marks each – AO3)

Q3. Decision Modelling and Explainability (10 marks)

a) Any two classification metrics with explanations:

- e.g., precision, recall, F1-score, accuracy (2 marks each – AO1)

b) Importance of explainability (2 marks – AO3)

Named method (e.g., SHAP, saliency maps) with explanation of purpose (4 marks – AO3)

Section B: Extended Analytical Questions (50 marks)

Each question is marked out of 10. A balanced response includes both **AO1 (up to 6 marks)** and **AO3 (up to 4 marks)**.

Q4. AI Regulation and Safety

- AO1: Knowledge of GDPR, EU AI Act, legal terms like fairness, lawfulness, transparency (up to 6 marks)
- AO3: Strengths (e.g., enforceable rules), challenges (e.g., global inconsistency), real-world example (up to 4 marks)

Q5. Reinforcement Learning

- AO1: Core concepts (agent, environment, policy, reward, Q-learning basics) (up to 6 marks)
- AO3: Critical evaluation – advantages (e.g., learning from feedback), limitations (e.g., sample inefficiency, safety issues) (up to 4 marks)

Q6. Interdisciplinary Applications

- AO1: Use of AI in two sectors, with relevant examples and constraints (up to 6 marks)
- AO3: Comparison of ethical, regulatory or technical priorities (e.g., fairness in healthcare vs. speed in finance) (up to 4 marks)

Q7. Software Development and AI Integration

- AO1: Tools described accurately (e.g., GitHub Copilot, auto-complete, static analysis) (up to 6 marks)
- AO3: Risk/benefit analysis: efficiency, skill shifts, code reliability (up to 4 marks)

Q8. Future Trends and Careers in AI

- AO1: Identification of two trends (e.g., foundation models, autonomous agents), implications for skills and careers (up to 6 marks)
- AO3: Ethical responsibilities (e.g., bias mitigation, transparency), professional conduct expectations (up to 4 marks)