

Candidate Name

Candidate Number

Centre Name

Centre Number

Paper 1: Core Theory

Sample Paper

1 hour 30 minutes

It is necessary to respond on the space provided in this question paper. Additionally, you must have a soft pencil (preferably of type B or HB), a clean eraser and a dark blue or black pen.

INSTRUCTIONS:

- Answer all questions.
- Use clear, concise language.
- Diagrams may be used where appropriate.
- Use Examples to support your answer.
- Calculators are not required.
- Do not use correction fluid.
- Avoid writing on any bar codes.

INFORMATION:

- This paper has a total of 70 marks.

The number of marks assigned for every question or its parts is indicated within brackets []

Section A: Multiple Choice Questions

[10 marks]

Answer **all 10** questions, each carry 1 mark.

1. Which of the following best describes artificial intelligence?
 - A. Data storage in cloud environments
 - B. Systems that exhibit human-like intelligence
 - C. Hardware designed for fast computation
 - D. None of the above
2. Rule-based systems are typically associated with:
 - A. Sub-symbolic learning
 - B. Statistical modelling
 - C. Symbolic reasoning
 - D. Reinforcement learning
3. Which term refers to a common task in Natural Language Processing?
 - A. Feature scaling
 - B. Intent recognition
 - C. Image segmentation
 - D. Pathfinding
4. The AI pipeline **does not** include:
 - A. Data input
 - B. Output formatting
 - C. Policy auditing
 - D. Decision logic

5. Overfitting in AI models typically results from:
- A. Insufficient training data
 - B. Too few model parameters
 - C. Excessively large test datasets
 - D. Training a model too briefly
6. An example of bias in AI systems could be:
- A. Equal performance across groups
 - B. Errors caused by randomness
 - C. Discrimination due to skewed data
 - D. Model interpretability
7. Which application would **most likely** use vision-based AI?
- A. Essay grading
 - B. Speech recognition
 - C. Product shelf analysis
 - D. Fraud detection
8. Which component in the AI pipeline transforms data before decision-making?
- A. Input
 - B. Inference
 - C. Transformation
 - D. Output

9. Which historical approach to AI is associated with symbolic reasoning?

- A. Generative adversarial networks
- B. Convolutional neural networks
- C. Production rule systems
- D. Reinforcement learning

10. GDPR is most directly related to:

- A. Explainability of AI models
- B. Model compression
- C. Data protection and privacy
- D. Cloud infrastructure

End of Section A

Section B: Short Answer Questions

[30 Marks]

Answer **all 6** questions, each carry equal marks.

11. Define artificial intelligence and briefly explain its multidisciplinary nature.

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[5 marks]

12. Describe two major differences between rule-based and data-driven AI models.

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[5 marks]

13. Explain what "prompt engineering" means and what its role is in AI model behaviour. Provide one example relevant to educational AI.

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[5 marks]

14. Identify and briefly describe three typical stages in the AI pipeline.

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[5 marks]

15. Explain how biased training data can result in unethical AI outcomes. Provide one example related to AI used in facial recognition.

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[5 marks]

16. Describe a real-world use case for AI in the retail industry that involves vision and pattern recognition. Explain how customer behaviour data may be used.

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[5 marks]

End of Section B

Section C: Structured Questions

[30 marks]

Answer **all 3** questions, each question carry 10 marks.

17. Natural Language Processing (NLP) in Education.

A large online learning platform wants to improve its student support chatbot and grading assistant using NLP technologies.

- a) List three common NLP tasks and briefly describe each. [6 marks]

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b) Provide an example of how NLP can support automated grading in education and identify one challenge this presents. [4 marks]

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18. Ethical Considerations in Vision-based AI Systems.

A secondary school installs an AI-powered facial recognition system to automatically take student attendance and track entry/exit times.

a) Define two core ethical principles relevant to AI development. [4 marks]

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19. Pattern Recognition in Marketing.

A supermarket chain deploys AI vision systems in its stores to track customer movement, analyse dwell times, and identify high-traffic zones. This data is used to rearrange stock placements and adjust advertising screens in real-time.

- a) Identify two types of AI technology used in this scenario and explain their roles. [4 marks]

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b) Discuss two ethical or privacy concerns associated with using visual AI in this context. [6 marks]

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End of Exam Paper