

Section A: Multiple Choice Questions

10 marks

Answers:

1. B
2. C
3. B
4. C
5. A
6. C
7. C
8. C
9. C
10. C

Section B: Short Answer Questions

30 marks

Each answer should demonstrate accurate recall, appropriate use of terminology, and brief, clear explanation. Partial credit allowed for incomplete but relevant responses.

Q11. Define artificial intelligence and briefly explain its multidisciplinary nature.

- AI is defined clearly (2 marks)
- Mention of disciplines such as computer science, psychology, linguistics, etc. (1 mark each; max 3)

[Total: 5 marks]

Q12. Two major differences between rule-based and data-driven AI models.

- Accurate comparison in format (e.g., symbolic vs. statistical) (2 marks each difference × 2)
 - Use of examples or relevant terminology (1 mark)
- [Total: 5 marks]**

Q13. Explain what is meant by “prompt engineering”.

- Clear definition of prompt engineering (2 marks)
 - Explanation of how it guides model behaviour/output (2 marks)
 - Simple example or context (1 mark)
- [Total: 5 marks]**

Q14. Three stages in the AI pipeline.

- Identification and brief explanation of each: input, transformation, logic/output (1 mark each for identification, 1 mark each for explanation)
- [Total: 5 marks]**

Q15. How biased training data results in unethical AI outcomes.

- Define bias in AI (1 mark)
 - Describe how training data can encode bias (2 marks)
 - Example scenario (2 marks)
- [Total: 5 marks]**

Q16. Real-world use case for AI in retail (visual recognition).

- Clear use case described (e.g., shelf scanning, product tagging) (3 marks)
 - Explanation of AI's role (2 marks)
- [Total: 5 marks]**

Section C: Structured Questions

30 marks

Marks awarded for structure, clarity, depth of explanation, and relevance to real-world or ethical implications.

Q17. NLP in education

- a) Any 3 valid NLP tasks: summarisation, translation, intent recognition (2 marks each)

Three common NLP tasks and descriptions:

- **Tokenisation** – The process of breaking down text into smaller units, such as words or phrases, to make it easier to analyse.
 - **Named Entity Recognition (NER)** – Identifying and classifying named entities in text, such as people, locations, or dates.
 - **Sentiment Analysis** – Determining the emotional tone or attitude expressed in a body of text, such as identifying positive or negative feedback in student reviews.
- b) Identification of one language challenge (e.g., ambiguity, context) + explanation (4 marks)

Example and challenge of automated grading (4 marks):

- **Example:** An NLP system can analyse short-answer questions by comparing student responses with model answers using semantic similarity and keyword extraction.
- **Challenge:** One major issue is interpretation ambiguity—students may phrase correct answers in unexpected ways, making it difficult for NLP to assign fair marks without a deep understanding.

[Total: 10 marks]

Q18. Ethical Considerations in Vision-based AI Systems

- a) Define 2 core ethical principles: fairness, **transparency**, etc. (2 marks each)

Two core ethical principles (4 marks):

- **Privacy** – AI systems should collect, store, and process personal data responsibly, ensuring data is not misused.
 - **Fairness** – Systems should operate without discrimination, avoiding bias related to race, gender, or socio-economic background.
- b) Discuss Societal implications in educational environments (max 6 marks – 2 each for depth, example, balance)
- **Accuracy:** Misidentification may occur due to poor lighting, changes in appearance, or biased training data, leading to false attendance records.
 - **Bias:** Facial recognition systems have been shown to perform differently across demographic groups, potentially disadvantaging certain students.
 - **Consent:** Students and guardians may not fully understand how their facial data is used or may not have a clear choice to opt out, raising ethical concerns over informed consent.

[Total: 10 marks]

Q19. Analyse Pattern Recognition in Marketing

- a) Two AI technologies and their roles (2marks each, max - 4 marks):

- **Computer Vision** – Detects and tracks customer movements using surveillance cameras and analyses dwell time near products.
- **Machine Learning** – Analyses historical data to identify patterns in customer behaviour and optimises product placement and digital signage in real time.

- b) Two ethical/privacy concerns (3 marks each, max - 6 marks):

- **Surveillance without consent** – Customers may not be aware they are being monitored and analysed, which can breach their expectation of privacy.
- **Data misuse** – Detailed behavioural data could be shared or sold to third parties without customer approval, leading to manipulation or unauthorised profiling.

[Total: 10 marks]