

**Student Name:** \_\_\_\_\_**Class:** \_\_\_\_\_**Student ID:** \_\_\_\_\_**Date:** \_\_\_\_\_

## Assessment Details

|                             |  |
|-----------------------------|--|
| <b>Duration:</b> 60 minutes | <b>Total Marks:</b> 100  |
| <b>Topics Covered:</b>      | <ul style="list-style-type: none"><li>• Machine Learning Fundamentals</li><li>• Real-World Applications</li><li>• Ethical Implications of AI Systems</li></ul> |

## Instructions to Students:

1. Read all questions carefully before attempting.
2. Show all working out - marks are awarded for method.
3. Calculator use is permitted except where stated otherwise.
4. Write your answers in the spaces provided.
5. If you need more space, use the additional pages at the end.
6. Time management is crucial - allocate approximately 1 minute per mark.

**Question 1**

**[2 marks]**

What is the primary difference between supervised and unsupervised learning?

A) Supervised learning uses labeled data, while unsupervised learning uses unlabeled data.

B) Supervised learning uses unlabeled data, while unsupervised learning uses labeled data.

C) Supervised learning is used for regression, while unsupervised learning is used for classification.

D) Supervised learning is used for classification, while unsupervised learning is used for regression.

**Question 2**

**[2 marks]**

Which type of machine learning algorithm is used for image recognition?

A) Linear Regression

B) Decision Trees

C) Convolutional Neural Networks (CNNs)

D) Support Vector Machines (SVMs)

**Question 3**

**[8 marks]**

Explain the concept of overfitting in machine learning and provide an example.

**Question 4**

**[8 marks]**

Describe a scenario where AI can be used to improve healthcare outcomes.

**Question 5**

**[40 marks]**

Develop a simple chatbot that can respond to basic user queries using natural language processing (NLP) techniques.



## Conclusion

This assessment is designed to evaluate students' understanding and application of AI concepts, including machine learning fundamentals, real-world applications, and ethical implications.

## References

List of references used in the assessment.