



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

UNIVERSITY ORDINARY EXAMINATION

2021/2022 ACADEMIC YEAR

**THIRD YEAR FIRST SEMESTER EXAMINATION FOR, DIPLOMA IN
INFORMATION TECHNOLOGY**

SCS 059: INTRODUCTION TO ARTIFICIAL INTELLIGENCE

DURATION: 2 HOURS

Instructions to candidates:

1. Answer question One and Any Other Two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

- a) Define the following terms as used in artificial intelligence. (5 marks)
 - (i) Artificial Intelligence
 - (ii) Model
 - (iii) Intelligent Agent
 - (iv) Robotics
 - (v) Learning
- b) Explain the performance measure that can be used to assess the rationality of an agent. (4marks)
- c) Discuss the P.E.A.S representation as used in Artificial Intelligence. (4 marks)
- d) With the aid of diagram differentiate between natural language understanding and natural language generation. (6 marks)
- e) Elucidate existing technologies / application in which speech recognition has been used. (5 marks)
- f) Outline reasons why python is the most popular A.I programming language. (6 marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a) Explain five ways in which natural language processing is used. (10 marks)
- b) Explain the components of expert systems. (6 marks)
- c) Differentiate between backward chaining and forward chaining. (4 marks)

QUESTION THREE (20 MARKS)

- a) Explain two ways in which an A.I system can improve its capabilities. (4 marks)
- b) Discuss existing machine learning methods used in training machine learning algorithms. (8 marks)
- c) Differentiate between computer vision and image processing and discuss the hierarchy of computer vision. (8 marks)

QUESTION FOUR (20 MARKS)

- a) Discuss factors that one should consider when selecting search algorithm. (6 marks)
- b) Explain the Artificial Intelligence knowledge cycle. (5 marks)
- c) Elucidate three motivations for distributing Artificial Intelligence. (3 marks)
- d) Discuss the primary categories of robots. (6 marks)