



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SPECIAL/SUPPLEMENTARY EXAMINATION FOR
DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY
ARTIFICIAL INTELLIGENCE

DATE: 18/1/2021

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Attempt Question one and any other two from Section B

QUESTION ONE

- a) Explain the term intelligent agent. (2 marks)
- b) Discuss any four properties of agent environments. (8 marks)
- c) Explain the following types of intelligence.
 - i. Logical-Mathematical intelligence (2 marks)
 - ii. Bodily-Kinesthetic intelligence (2 marks)
 - iii. Spatial intelligence (2 marks)
- d) Describe the functionality of the following AI components and how they are implemented.
 - i. Perception (2 marks)
 - ii. Reasoning (2 marks)
 - iii. Action (2 marks)
- e) Distinguish between each of the following sets of agent environments. Give an example in each case.
 - i. Dynamic and Static environments (4 marks)
 - ii. Discrete and Continuous Environments (4 marks)

SECTION B

QUESTION TWO

- a) Using examples explain the following types of Rule Based Systems
 - i. Forward chaining (4 marks)
 - ii. Backward chaining (4 marks)
- b) Discuss ***Machine vision and image processing*** as a key area in Artificial intelligence based on the following titles. (12 marks)
 - i. Overview
 - ii. State of the art
 - iii. Current Applications
 - iv. Potential Applications
 - v. Challenges and Open Issues
 - vi. Conclusion

QUESTION THREE

- a) Discuss ***robotics*** concept as a key area in Artificial intelligence based on the following titles. (10 marks)
 - i. Overview
 - ii. State of the art
 - iii. Current Applications
 - iv. Potential Applications
 - v. Challenges and Open Issues
 - vi. Conclusion
- b) Explain three major goals of Artificial Intelligence. (6 marks)
- c) Outline any four limitations of expert systems. (4 marks)

QUESTION FOUR

- a. Differentiate programming without A.I and with A.I (6 marks)
- b. Discuss any four applications of A.I (8 marks)
- c. Explain the following types of Knowledge acquisition as used in A.I.
 - i. Auditory Learning (2 marks)
 - ii. Episodic Learning (2 marks)
 - iii. Motor Learning (2 marks)

QUESTION FIVE

- a) With the aid of a well labeled diagram, explain the components of an expert system. (10 marks)
- b) Justify the statement that “Artificial Intelligence is Multi-disciplinary” (4 marks)
- c) Difference between Human and Machine Intelligence. (4 marks)
- d) Explain Natural Language Processing as used in AI. (2 marks)