



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY

DIT 208: ARTIFICIAL INTELLIGENCE

DATE: 30/4/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer **question ONE** and any other **TWO** questions.

QUESTION ONE (30 MARKS) (COMPULSORY)

- a) Explain the term intelligence as used in A.I. (2 marks)
- b) Discuss 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) Various organizations around the globe have embarked on a mission to implement A.I enabled systems. Discuss four advantages of A.I as used in today's daily chores. (8 marks)

QUESTION TWO (20 MARKS)

- 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 (20 MARKS)

- a) Explain two major goals of Artificial Intelligence. (4 marks)
- b) Outline any four limitations of expert systems. (4 marks)
- c) 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)
- d) Artificial intelligence systems have been put in good use in most areas of ICT. However, there are some challenges associated with the use A.I powered systems. Explain any two challenges that are as a result of this. (4 marks)

QUESTION FOUR (20 MARKS)

- 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. Stimulus-Response Learning (2 marks)
 - ii. Spatial Learning (2 marks)
 - iii. Relational Learning (2 marks)

QUESTION FIVE (20 MARKS)

- 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)