



# MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)  
University Examinations for 2015/2016 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST SEMESTER EXAMINATION FOR DIPLOMA IN INFORMATION AND  
COMMUNICATION TECHNOLOGY

ARTIFICIAL INTELLIGENCE

Date: 3/8/2018

Time: 8:30 – 10:30 AM

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## INSTRUCTIONS

Attempt Question one and any other two from Section B

### QUESTION ONE (COMPULSORY)

- 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: ANSWER ANY OTHER TWO QUESTIONS

### 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. (12 marks)
- i. Overview
  - ii. State of the art
  - iii. Current Applications
  - iv. Potential Applications
  - v. Challenges and Open Issues
  - vi. Conclusion
- b) Explain two major goals of Artificial Intelligence. (4 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)