



MACHAKOS UNIVERSITY

Special/Supplementary Examinations 2017/2018

DEGREE OF BACHELOR OF SCIENCE COMPUTER SCIENCE

SCO 205: FOUNDATIONS OF ARTIFICIAL INTELLIGENCE

DATE: AUGUST 2018

TIME: 2 HOURS

INSTRUCTIONS: Answer **Question One** and **Any Other Two** questions in this paper

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. Show the values of the statement below in a truth table and make a conclusion on its result. $\neg (\neg (P \wedge Q) \rightarrow (\neg P \vee \neg Q))$ (4 marks)
- f. Write the following statements in predicate logic.
 - i. Some barking dogs are irritating
 - ii. All Kenyans are either loyal to or hate their country. (2 marks)

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 Four

- a. Differentiate programming without A.I and with A.I (6 marks)
- b. Discuss four ways through which Kapa Oil Industry can apply A.I in their operations (8 marks)
- c. An AI specialist wants to use uninformed strategy to solve a given defined problem. Explain any four options he may use in this case. (8 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)