



MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE
IN INFORMATION TECHNOLOGY

SIT 305: FOUNDATIONS OF ARTIFICIAL INTELLIGENCE

DATE: 2/8/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- 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 (20 MARKS)

- 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 methods he may use in this case. (8 marks)

QUESTION THREE (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)

QUESTION FOUR (20 MARKS)

- a) Discuss five types of knowledge that can be represented and used to solve problems in Artificial intelligence. (10 marks)
- b) With the aid of relevant examples, explain the main approaches to Artificial Intelligence that embodies all its concepts and theories. (10 marks)

QUESTION FIVE (20 MARKS)

- a) Explain three properties of intelligent agent environments. (6 marks)
- b) Differentiate between deep reasoning and shallow reasoning using suitable examples. (4 marks)
- c) Discuss three types of learning that can be used in training machines. (6 marks)
- d) State four applications of Natural Language Processing. (4 marks)