**BINGHAM UNIVERSITY**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**DEPARTMENT OF COMPUTER SCIENCE**

**FIRST SEMESTER EXAMINATION, 2019/2020 SESSION**

**COURSE TITLE:** ARTIFICIAL INTELLIGENCE

**COURSE CODE:**  CMP 409 **COURSE CREDIT UNITS:** 2

**TIME ALLOWED:** 2HRS

**INSTRUCTION:** ANSWER ANY **THREE** QUESTIONS

1. (a) What is Intelligence? (3 marks)

(b) As an Artificial intelligence expert you are contracted by a telecommunications company to develop a robot that would mimic human behavior in responding to clients who seek assistance with their services. The robot is ready but you need to test its ability. Write briefly on your approach in determining the machines ability using Alan Turing’s methods. (8 marks)

(c) Explain in detail why Sentimental analysis is important in Natural Language Processing.

(5 marks)

(d) Explain First order logic (4 marks)

1. (a) What is Semantic Parsing? (3 marks)

(b) A Nigerian version of Apple’s Siri was developed. The machine was meant to interact with mobile phone users and present them with immediate answers and solutions. A user asked, “I wanna chop meat”. The machine was confused as to whether the user meant “I wanna cut meat” or I wanna eat meat”. As an AI expert, if you were presented with this problem, what will be your approach in solving it? (8 marks)

(c) Named Entity Recognition (NER) is a key part of Natural Language Processing, Why?

(4 marks)

(d) With the aid of a diagram. List and explain the components of an expert system. (5 marks)

1. (a) What is an Expert System? (3 marks)

(b) The Department of State Security (DSS) through their investigations identified the major sponsors of Boko Haram. The DSS then drafted a 10,000 paged document explaining their involvements. For the fear of mob actions against these individuals the DSS decided to remove their names. Due to the volume of the document, you have been contracted to aid in replacing these names. Write a program using python that will replace the name with the word REDACTED (8 marks)

(c) Differentiate between syntax and semantics as it concerns knowledge representation.

(4 marks)

(d) List and explain any four Benefits of Expert System (5 marks)

1. (a) What is Knowledge Representation? (3 marks)

(b) Using this text *“London is the capital and most populous city of England and the United Kingdom. Standing on the River Thames in the south east of the island of Great Britain, London has been a major settlement for two millennia.* ***It*** *was founded by the Romans, who named it Londinium.”*

As a human reading this sentence, you can easily figure out that “*it”* means “*London”*. Explain how the machine can figure this out. (8 marks)

(c) State the advantages and disadvantages of Knowledge representation using rule-based system.

(5 marks)

(d) Explain frame based systems and how it relates to database (4 marks)

1. (a) Explain Relation Extraction (3 marks)

(b) Differentiate between Shallow Semantic parsing and Deep Semantic parsing. (5 marks)

(c) In recommending solutions to problems the inference engine takes two approaches. Briefly explain these approaches. (8 marks)

(d) Define user interface (4 marks)