**BINGHAM UNIVERSITY**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**DEPARTMENT OF COMPUTER SCIENCE**

**FIRST SEMESTER EXAMINATION, 2021/2022 SESSION**

**COURSE TITLE:** ARTIFICIAL INTELLIGENCE

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

**TIME ALLOWED:** 2HRS

**INSTRUCTION:** ANSWER **QUESTION ONE** AND ANY OTHER **TWO** QUESTIONS

1. (a) What is Intelligence? (6 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. (12 marks)

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

(6 marks)

(d) Explain Relation Extraction (6 marks)

1. (a) What is Semantic Parsing? (4 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? (11 marks)

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

(5 marks)

1. (a) What is an Expert System? (4 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 (11 marks)

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

(5 marks)

1. (a) Explain the two main approaches to machine learning listing areas of application (4 marks)

(b) MTN is carrying out an evaluation of the amount spent on advertising their products and the effect on the profits recorded. MTN wants to know the profit they will get with an increased budget for advertisement. MTN has contracted your company to provide future estimates to help them better manage their resources. Your Boss picks you to head the team and suggests the use of machine learning what will be your approach in terms of algorithm and why? (11 marks)

(c) Define user interface (5 marks)

1. (a)Using a graph explain the concept used in training using K Nearest Neighbor (KNN).

(6 marks)

1. A researcher deploys a classification model in an attempt to accurately classify cyber-attack traffic from normal data traffic. At the testing stage the research achieves a 95.1% accuracy. How does the researcher evaluate the performance of the algorithm in other to prevent cases of overfitting and other errors? (10 marks)
2. What is feature scaling? (4 marks)