PAN AFRICA CHRISTIAN UNIVERSITY
EXAMINATIONS PAPER

PAN AFRICA CHRISTIAN UNIVERSITY

DIPLOMA OF INFORMATION COMMUNICATION TECHNOLOGY

END OF SEMESTER EXAMINATION

DEPARTMENT: **COMPUTING AND INFORMATION TECHNOLOGY**

COURSE CODE: **DICT 0214**

COURSE TITLE: **INSTRUCTION TO ARTIFICIAL INTELLIGENCE**

EXAM DATE: **APRIL, 2023**

TIME:

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other Three questions in Section **B.**
- Write only your **student number** on the answer booklet provided.
- None programmable calculator permitted
- Calculators on phones, tablets and computers are NOT permitted in Theory Papers

SECTION A

(Answer ALL questions in this section)

QUESTION ONE

a) Describe **FOUR** classification of artificial intelligence **[4 Marks]**

b) Differentiate between parametric and non-parametric model as used in artificial intelligence **[2 Marks]**

c) List down **FOUR** methods used to avoid overfitting in neural networks: **[2 Marks]**

d) Explain why experts usually have detailed knowledge of a limited area of a specific domain in expert systems. **[2 Marks]**

SECTION B (Answer Any Three (3) Questions)

QUESTION TWO

a) Using suitable examples describe how the domain expert determine values of the likelihood of sufficiency and the likelihood of necessity in Knowledge representation **[3 Marks]**
b) Differentiate between Mamdani-type and Sugeno-type fuzzy inferences **[2 Marks]**
c) Design the class-frame for the object Student, determine its attributes and define several instances for this class. **[5 Marks]**

QUESTION THREE

a) With clear examples discuss **THREE** components of expert system **[6 Marks]**
b) The delta rule and Hebb's rule represent two different methods of learning in neural networks. Explain the differences between these two rules. **[4 Marks]**

QUESTION FOUR

a) Explain **FIVE** different ways to evaluate the performance of the Machine Learning model.

[5 Marks]

b) Describe the Turing test for artificial intelligence and justify its validity from a modern standpoint. **[5 Marks]**

QUESTION FIVE

a) List out the **TWO** various kinds of steps that we make in constructing a plan in artificial intelligence **[2 Marks]**

b) Describe a typical process of the development of a genetic algorithm for solving a real problem and its fundamental difficulties **[4 Marks]**

c) Compare and contrast deep learning Vs reinforce learning **[4 Marks]**

QUESTION SIX

a) Describe any **FIVE** major players in the expert system development team. **[5 Marks]**

b) Giving suitable examples discuss **TWO** components of natural language processing **[5 Marks]**

