NATIONAL OPEN UNIVERSITY OF NIGERIA

PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESS WAY, JABI, ABUJA

FACULTY OF SCIENCES

2021_2 EXAMINATION 45678

COURSE CODE: CIT 478

COURSE TITLE: ARTIFICIAL INTELLIGENCE

CREDIT: 2 UNITS

TIME ALLOWED: 2HOURS

**INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY OTHER THREE (3)**

Q1a. Differentiate between the terms Artificial Intelligence and Artificial Agent. List two (2) examples each of "commonplace" tasks as well as "expert" tasks that an intelligent entity can perform. (6 marks)
b. What is Knowledge Engineering? List three (3) types of expert system (5 marks)
c. List the six (6) basic characteristics of a good knowledge representation (6 marks)

d. Describe the two (2) methods of reasoning when using Inference rules (4 marks)
e. Explain the term Knowledge Base (2 marks)

f. What are the advantages of expert system? (2 marks)

Q2a. Using Brooks' mobile robot example, discuss with the aid of a diagram the three (3) layers of the subsumption architecture (6 marks)
b. List four (4) characteristics of Percept-based agents (4 marks)
c. List any five (5) Agent architectures you know (5 marks)

Q3a. Explain the concept of heuristic search? (6 marks)
b. Describe the Zero Moment Point (ZMP) technique (5 marks)
c. List Four (4) variants of Hill climbing (4 marks)

4a. Give a detailed description of Lisp programming Language (5 marks)
b. State three (3) Prolog's single data types and explain any two (5 marks)
c. List any five (5) major tasks in Natural Language Processing (NLP) (5 marks)

5a. What are the advantages of systems based on machine-learning algorithms over hand-produced rules? Explain the term greedy algorithm (7 marks)
b. List Four (4) approaches to Artificial Intelligence (4 marks)
c. Differentiate between discrete and continuous environment (4 marks)