NATIONAL OPEN UNIVERSTYOF NIGERIA,
University Village, 91 Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi, Abuja
FACULTY OF SCIENCE
DEPARTMENT OFCOMPUTER SCIENCE
SEPTEMBER 2020 EXAMINATIONS

COURSE CODE: CIT 478
COURSE TITLE: ARTIFICIAL INTELLIGENCE
COURSE UNIT: 2 UNITS
TIME ALLOWED: 2 HRS
INSTRUCTION: ANSWER QUESTION 1 AND ANY OTHER 3 (3) QUESTIONS

QUESTION ONE

1ai) Mention any four programming languages used for AI programming? **(2 marks)**
1aii) What is an agent? **(2 marks)**
1aiii) List the fundamental faculties of an AI agent? **(2 ½ marks)**
1b) Identify 6 major tasks in Natural Language Processing **(3 marks)**
1ci) Mention the three action states of an inference engine **(1 ½ marks)**
1cii) Illustrate how the three action states interrelate. **(8 marks)**
1d) Propose an algorithm for the best first search? **(6 marks)**

QUESTION TWO

2a) "Prof Effiong taught this course" can also be interpreted as "this course was taught by Prof Effiong". It therefore violates one of the characteristics of a good knowledge representation. Mention the violated characteristic and justify your answer. **(3 marks)**

2b) Fill the empty cells with the most appropriate AI programming language

Programming	Description
	A general purpose logic programming language associated with artificial intelligence and computational linguistics
	Was developed by Allen Newell, Cliff Shaw, and Herbert Simon at RAND Corporation and the Carnegie Institute of Technology
	P, a 3-bit field used for an operation code when the cell is used as an instruction and unused when the cell is data.
	influenced by the notation of Alonzo Church's lambda calculus
	All program code is written as s-expressions
	A computation is initiated by running a *query* over relations

(**9 marks)**

2c) List any six areas where Lisp has been used. **(3 marks)**

QUESTION THREE:

3ai) Identify five tasks that characterize intelligent behaviour? **(2 ½ marks)**
3aii) Enumerate what AI cannot do? **(2 ½ marks)**
3b) identify the features that characterizes the Brooks' architecture? **(5 marks)**
3c) Formulate an algorithm for searching a state space for solution **(5 marks)**

QUESTION FOUR
4ai) What is a problem space? **(1 mark)**
4aii) Which is the best solution as a problem space is traversed? **(1 mark)**
4aiii) Given two nodes h1 and h2, propose an assertion and prove that h2 dominates h1 **(5 marks)**
4bi) With the aid of a diagram, illustrate the searching process indicating at least an initial state and the goal states? **(2 marks)**
4bii) Generate successors? **(2 marks)**
4biii) Generate successors path to goal? **(2 marks)**
4biv) Find goal? **(2 marks)**

QUESTION FIVE

5a) Categorize the various approaches to AI **(8 marks)**
5bi) What is a transportation table? (**2 marks)**
5bii) When is Limited Discrepancy Search necessary and how is it achieved? **(3 marks)**
5c) Identify four questions that are important to derive knowledge from an AI perspective? **(2 marks)**