PAN AFRICA CHRISTIAN UNIVERSITY

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

END OF SEMESTER EXAMINATION

DEPARTMENT:	**COMPUTING AND INFORMATION TECHNOLOGY**
COURSE CODE:	**BSIT211**
COURSE TITLE:	**INTRODUCTION TO ARTIFICIAL INTELLIGENCE**
CAMPUS:	**ROYSAMBU**
EXAM DATE:	**WEDNESDAY, 4TH DECEMBER 2024**
TIME:	**6:00PM-9:00PM**

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 calculators permitted
- Calculators on phones, tablets and computers are NOT permitted in Theory Papers

SECTION A

(Answer ALL questions in this section)

Question 1:

a) Using an example, explain how the inference engine works. **[2 Marks]**
b) Discuss any two applications of AI. **[2 Marks]**
c) An AI system is composed of an agent and its environment. Differentiate between an agent and environment. **[2 Marks]**
d) AI is developing with such an incredible speed, sometimes it seems magical. There is an opinion among researchers and developers that AI could grow so immensely strong that it would be difficult for humans to control. Analyze four of these threats citing examples. **[4 Marks]**

SECTION B

(Answer any THREE (3) questions in this section)

Question 2:

a) Translate the following into predicate logic:

i. Every gardener who lives in a city likes the sun. **[2 Marks]**

ii. Cats eat everything they like. **[2 Marks]**

b) Discuss any two search algorithms and how they can be implemented using appropriate pseudo codes. **[2 Marks]**

c) The domain of Artificial Intelligence is huge in breadth and width. Describe four broadly common and prospering research areas in the domain of AI. **[4 Marks]**

Question 3:

a) By use of examples, differentiate between proposition logic and predicate logic as methods of knowledge representation. **[2 Marks]**
b) Discuss four reasons of adopting expert systems in solving Artificial Intelligence challenges. **[4 Marks]**
c) Describe the components of an expert system. **[4 Marks]**

Question 4:

a) Using examples, differentiate between a "sensor" and an "actuator" in the context of intelligent agents' technology. **[4 Marks]**
b) Discuss three short-comings of using natural language for knowledge representation. **[6 Marks]**

Question 5:

a) Describe the features of a good Knowledge Representation schemes. **[2 Marks]**
b) The success of an intelligent behavior of a system can be measured with Turing Test. Discuss the Turing test process. **[4 Marks]**
c) With examples, discuss Neural Networks, clearly highlighting their features, applications and limitations. **[4 Marks]**

Question 6:

a) Describe computer vision and illustrate how it plays a vital role in robotics. **[4 Marks]**
b) Using semantic net, represent the following information:
"Every human, animal and bird are living things who breathe and eat. All birds can fly. All man and woman are humans who have two legs. Cat is an animal and has a fur. All animals have skin and can move. Giraffe is an animal who is tall and has long legs. Parrot is a bird and is green in color". **[6 Marks]**

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