COLLEGE OF ENGINEERING AND APPLIED SCIENCES

NCSC 301-ARTIFICIAL INTELLIGENCE

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER 2024

LECTURER: MRS L. FUNDISI

DURATION: 3 HOURS

INSTRUCTIONS

Answer ANY 4 (FOUR) Questions

All question carries equal marks (25)

Begin your answer to each question on a fresh page

Logical answering, smartness and use of examples will earns more marks

Question One

Use any 5 types of agents of your choice to formulate the **Performance Environment Actuator Sensor** (PEAS) description of their task environments and characterize it in terms of their properties

[25]

Question Two

    a) With the aid of a diagram explain the difference between backward and forward chaining in an inference engine   [10]

    b) With the aid of examples explain and describe the application of expect systems in the following areas; agriculture, education, Finance, mechanical and health sector.   [15]

Question Three

    Explain the following helps in the implementation of supervised learning models :
    a) Linear regression
    b) Feature engineering
    c) Decision trees
    d) Support vector machine
    e) K-nearest neighbors   [25]

Question Four

Use appropriate diagram to describe the fuzzy logic system architecture and show how this architecture can be used in an industrial application area of your choice.   [25]

Question Five

a) Using practical examples, explain the key components of Natural Language Processing. [13]
b) With the aid of examples, discuss how generative AI has impacted the following areas. [12]
    i. Medical Imaging and Healthcare
    ii. Education and training
  iii. Creative industry

Question Six

Discuss the ethical considerations surrounding the use of robotics in society. What are some potential ethical dilemmas associated with the deployment of autonomous robots in various fields?   [25]

END OF EXAMINATION