ARTIFICIAL INTELLIGENCE

CAT TWO – TAKE AWAY

Instructions:

i.   Work to be done individually and not in groups
ii.   Your document should contain your correct name and correct admission number, and submitted to the google folder shared in the eLearning platform
iii.   Deadline: **August 4th, 2021**

Questions:

1.
   a. Define an **expert system**   (1 mark)
   b. Explain the concept of **heuristics** as relates to expert systems   (1 mark)
   c. XSolutions is a business firm that provides its clients with financial business help in form of micro-loans and asset financing. As an I.T. professional, they have consulted you to build an expert system that will help manage two areas of business: eligibility of customer for loans and amounts they can receive based on their credit history, and predictive profit and loss tracking. Using this information, answer the following questions:
      (i)   Explain, with an aid of a diagram, the components of the expert system that you'll include, and their functions.   (6 marks)
      (ii) Explain how **forward chaining** and **backward chaining** can be implemented to optimize the efficiency of the above system's inference engine.   (4 marks)
      (iii) Highlight three advantages and three disadvantages of using expert systems in a business environment   (6 marks)
2.
   a. Define **machine learning**   (1 mark)
   b. Using a self-driving car as an example, explain how it can be able to learn its environment and optimize its actions using the following machine learning algorithms:
      (i)   Supervised learning   (3 marks)
      (ii) Unsupervised learning   (3 marks)
   c. Critically explain the advantages and disadvantages of supervised vs unsupervised learning as relates to the development and operation of a self-driving vehicle.   (4 marks)
   d. Superintelligence is a branch of AI that focuses on building highly intuitive and predictive intelligent agents that can efficiently perform tasks better than the brightest minds in the said fields, possessing highly cognitive knowledge of human behavior and consciousness. Explain **three** challenges experienced in our technological age in building of such agents
                                                                                           (6 marks)