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KNOWLEDGE FOR DEVELOPMENT

(Knowledge for Development)
KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
YEAR TWO SEMESTER ONE EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE COMPUTER SCIENCE

COURSE CODE   :   CSC217

COURSE TITLE   : INTRODUCTION TO ARTIFICIAL INTELLIGENCE.

DATE: 24/01/2022   TIME: 02:00 P.M – 04:00 P.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSORY) [30 MARKS]

a) Describe the following terms

   I.   Minimum spanning tree

   II.   Binary tree   **[2 Marks]**

b) Difference in Robot System and Other AI Programs   **[4 Marks]**

c) Describe the eras of computing that exist and draw appropriate diagram.   **[6 Marks]**

d) Describe the applications of Robotics   **[4 Marks]**

e) Determine whether the following statements are **TRUE/FALSE** .

   i.   A machine will never be intelligent until understands sentences like "The horse raced past the barn fell."

   ii.   Because machines aren't limited by short-term memory, they will eventually understand and translate languages better than people do

   iii.   AI machines are so far better at playing checkers than recognizing your mother.

   iv.   Forward chaining inference is especially suitable for diagnosis or troubleshooting

   v.   The independence assumption is why probabilistic reasoning is especially reliable

   vi.   Semantic networks, frames and classes all share a similar technique for inferring common properties   **[6 Marks]**

f) Describe business analytics   **[4 Marks]**

g) Describe the factors that contributed to the growth of AI   **[4 Marks]**

QUESTION TWO [20 MARKS]

a) Describe semantics and syntax terms used in Natural language processing   **[4 Marks]**

b) Describe Goal Based Agents with aid of a diagram   **[6 Marks]**

c) Differentiate between classification and regression   **[4 Marks]**

d) Distinguish between the following environments:

   I.   Single Agent and Multi-agent

   II.   Observable and partially observable   **[6 Marks]**

QUESTION THREE [20 MARKS]

a) Describe natural language processing challenges [4 Marks]

b) Describe THREE natural language processing tools and services [6 Marks]

c) Describe the effectiveness of Alpha-Beta in game playing [6 Marks]

d) Describe the advantage of depth first search. [4 Marks]

QUESTION FOUR [20 MARKS]

a) Define semantic web [2 Marks]

b) Explain what neural networks and deep learning are, and why they are important in today's AI field. [6Marks]

c) Describe the difference between deduction and induction [4 Marks]

d) Describe machine learning types and approaches [8 Marks]

QUESTION FIVE [20 MARKS]

a) Differentiate between human and machine intelligence. [4 Marks]

b)

    i. Draw the binary search tree that is created if the following numbers are inserted in the tree in the given order. 12 15 3 35 21 42 14 [3 Marks]

    ii. Draw a balanced binary search tree containing the same numbers given in part i [3 Marks]

c)

    i. Describe the Intelligent agent

    ii. Describe the properties of the intelligent agents. [6 Marks]

d) Describe some of the AI approaches, as well as approaches from other disciplines, used in robotics applications. [6 Marks]