



(Knowledge for Development)

KIBABII UNIVERSITY

**UNIVERSITY EXAMINATIONS
2020/2021 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: 21/06/2021 TIME: 9:00 A.M – 11:00 P.M

INSTRUCTIONS TO CANDIDATES

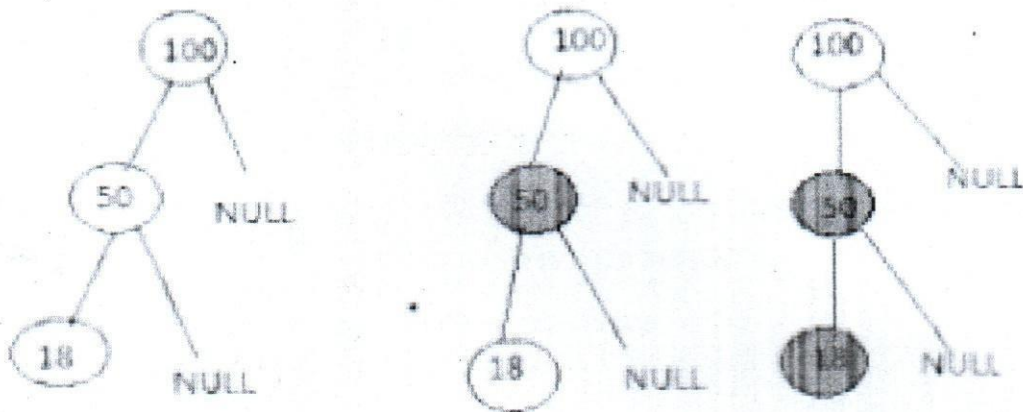
ANSWER QUESTIONS ONE AND ANY OTHER TWO

QUESTION ONE [COMPULSORY] [30 MARKS]

- a) Describe the following terms
- I. Graph [1 Mark]
 - II. Artificial Intelligence [1 Mark]
- b) Explain what natural language processing is. [4 Marks]
- c) Describe the eras of computing that exist and draw appropriate diagram. [6 Marks]
- d) Describe why planning is difficult. [4 Marks]
- e) Determine whether the following statements are **TRUE/FALSE**
- i. Weak AI is the view that computer models can be a useful way of studying the mind.
 - ii. In Searle's thought experiment, manipulating symbols is not enough to pass the Turing Test.
 - iii. Multi-agent systems are dependent intelligent agents that interact with each other.
 - iv. Artificial intelligence (AI) is the science of making humans imitate computer thinking and behavior.
 - v. A robot is a mechanical device equipped with simulated human senses and the capability of taking action on its own.
 - vi. A machine has passed the Turing test for intelligence. [6 Marks]
- f) Describe the special property of red-black trees and what root should always be [4 Marks]
- g) Describe 3 innovations in artificial intelligence that will help change our lives [4 Marks]

QUESTION TWO [20 MARKS]

- With the aid of relevant diagram describe the relationship between percepts, environment and actions. [4 Marks]
- Describe utility-based agents. [6 Marks]
- Consider the below formations of red-black tree.



All the above formations are incorrect for it to be a red black tree. then what may be the correct order? [4 Marks]

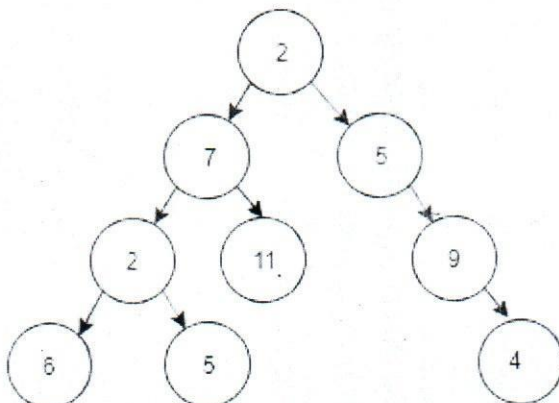
- Distinguish between the following environments:

I. Accessible and inaccessible [3 Marks]

II. Deterministic vs Non deterministic [3 Marks]

QUESTION THREE [20 MARKS]

- For the tree below write the in-order traversal, preorder and post order traversals [6 Marks]



- Describe THREE issues in knowledge representation. [6 Marks]

- c) Describe the effectiveness of Alpha-Beta in game playing
- d) Describe the advantage of depth first search.

[6 Marks]

[2 Marks]

QUESTION FOUR [20 MARKS]

- a) Define semantic web
- b) Explain what neural networks and deep learning are, and why they are important in today's AI field.
- c) Describe the difference between deduction and induction
- d) Describe machine learning types and approaches

[2 Marks]

[6 Marks]

[4 Marks]

[8 Marks]

QUESTION FIVE [20 MARKS]

- a) Differentiate between human and machine intelligence.
- 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
 - ii. Draw a balanced binary search tree containing the same numbers given in part b(i)
- c)
 - i. Describe the Intelligent agent
 - ii. Describe the properties of the intelligent agents.
- d) Describe some of the AI approaches, as well as approaches from other disciplines, used in robotics applications.

[4 Marks]

[3 Marks]

[3 Marks]

[3 Marks]

[3 Marks]

[6 Marks]