



(KNOWLEDGE FOR DEVELOPMENT)

**KIBABII UNIVERSITY
(KIBU)**

**UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR**

**SPECIAL/ SUPPLEMENTARY EXAMINATIONS
FOURTH YEAR SECOND SEMESTER**

**FOR THE DEGREE IN
(INFORMATION TECHNOLOGY)**

COURSE CODE: BIT 425

COURSE TITLE: INTELLIGENT SYSTEMS

DATE: 18/01/2022

TIME: 2.00 P.M. – 4.00 P.M.

INSTRUCTIONS

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSORY)**[30 MARKS]**

- a. Explain the role played by the following in the construction of an Intelligent Systems:
- i. Fuzzy Logics [2 marks]
 - ii. Genetic algorithm [2 marks]
- b. i. Most Companies and Organizations prefer the use of Expert Systems in their service delivery as opposed to Human Experts. What are the gains and losses behind this? [6 marks]
- ii. If you were to develop an Expert System, explain the procedure you will follow, in each case identify the key Personnel involved. [4 marks]
- Using a suitable illustration, explain the key components of a rule based Expert System. [6 marks]
- c. Is it possible that the use of Intelligent System may suppress the use of Human Intelligence? Agree or disagree, justify. [4 marks]
- d. Is an Antivirus an Expert System or an Intelligent Agent? Discuss. [4 marks]

QUESTION TWO**[20 MARKS]**

- a. Explain at least FIVE fields that have contributed and shaped Artificial Intelligence and Intelligent Systems. [5 marks]
- b. Explain at least FIVE application areas of Artificial Intelligence. [5 marks]
- c. Assume you are automating a Tax Driver Agent (TDA) to operate between Kibabii University main gates to Kanduyi.
- i. Explain what will make this Agent Rational [2 marks]
 - ii. Specify the Agents PEAS. [6 marks]
 - iii. Generally, discuss the kinds and characteristics of the Environment the TDA will be operating in. [4 marks]

QUESTION THREE**[20 MARKS]**

- a. For an intelligent system (example Expert system) to justify the course of its actions, it always engage in reasoning. Discuss the three common reasoning strategies used. [6 marks]
- b. Explain what is practical reasoning is and describe the intentions in practical reasoning agent. [4 marks]

- c. Suppose you want to build a deliberate agent. Describe the two problems that you must address and give your opinion on the general progress on the solution to these problems. [4 marks]
- d. Explain the meaning of the following concepts (and give an example in each case) in relation to Intelligent Systems:
- i. Artificial Neural Network and Intention Systems [3 marks]
 - ii. Supervised and Supervised Learning [3 marks]

QUESTION FOUR

[20 MARKS]

Differentiate between Fuzzy system and an Expert system.

Give a signature of production rules in logic form.

Using a well labeled diagram describe the various components of a fuzzy system.

Explain various real life application of fuzzy systems

QUESTION FIVE

[20 MARKS]

- a. Discuss framework that one can use when developing the following:
- i. Agents and Multi-Agents [2 marks]
 - ii. Expert system [2 marks]
- b. Why most research is being carried on:
- i. Natural language processing [2 marks]
 - ii. Ontologies [2 marks]
 - iii. Virtual Reality [2 marks]
 - iv. Robots [2 marks]
- c. Write a simple prolog program to computer sum of numbers between 1-N, where N is a positive integer and is used as the ceiling in the query processing. Explain how you will compile this program or database of fact and simulated the output for sum where N=10. [8 marks]