KISII UNIVERSITY

SCHOOL OF BUSINESS AND ECONOMICS

EXAMINATIONS FOR THE AWARD OF THE DEGREE OF BACHELOR OF BUSINESS AND INFORMATION MANAGEMENT

Exams Period: Sep-Dec 2023

BINM 455: EXPERT SYSTEMS

STREAM: Y4S2 TIME: 2HRS DATE:

INTRUCTIONS:

1. *Do not write anything on this question paper*
2. *Answer Question **ONE** and any **Other Three** Questions.*

QUESTION ONE

a) Define expert systems and explain their key characteristics. (5 marks)
b) Explain the reasons for the creation of expert systems. (4 marks)
c) Discuss the primary applications of expert systems in various domains. (6 marks)
d) Identify the significant distinctions between the Development Environment and the Consultation Environment in an Expert System. (4 marks)
e) What is knowledge engineering, and why is it essential in the development of expert systems? (6 marks)

QUESTION TWO

a) Explain the fundamental principles of machine learning and its three main categories: supervised learning, unsupervised learning, and reinforcement learning. Provide examples of applications for each category. (10 marks)
b) Define Natural Language Processing (NLP) and its significance in the field of artificial intelligence. Provide examples of how NLP enhances human-computer interaction. (5 marks)

QUESTION THREE

a) Describe the steps involved in the knowledge engineering process, from knowledge acquisition to maintenance and updating. (7 marks)
b) Explain the role of inference rules in the knowledge representation of expert systems. Provide examples of inference rules used in expert systems. (6 marks)

QUESTION FOUR

a) Explain the concept of searching in the context of problem-solving. (3 marks)
b) Describe three common search algorithms used in expert systems and discuss their advantages and disadvantages. (12 marks)

QUESTION FIVE

a) Outline and provide a brief description of the phases involved in the development of an expert system. (6 marks)
b) Explain three forms in which knowledge can be represented. (3 marks)
c) Define logical agents in the context of artificial intelligence and explain how they make decisions based on formal logic. (6 marks)