



TECHNICAL UNIVERSITY OF MOMBASA

INSTITUTE OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

ICS 2405: KNOWLEDGE BASED SYSTEMS

SPECIAL SUPPLEMENTARY EXAMINATION

SERIES:AUGUST2017

TIME:2HOURS

DATE:17Sep2017

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of Choose No questions. AttemptChoose instruction.

Do not write on the question paper.

Question ONE

a) Translate the following into first-order logic (FOL)

- 1) Some dogs bark
- 2) All dogs have four legs
- 3) Everybody likes ice cream
- 4) All barking dogs are irritating [8 Marks]

a) Discuss the pros and cons of Artificial intelligence [10 Marks]

b) Define the terms (a) intelligence (b). artificial intelligence [4 Marks]

c) There are well-known classes of problems that are intractably difficult for computers and other classes that are provably undecidable. Does this mean that AI is impossible. [4 Marks]

d) Examine the AI literature to discover whether the following tasks can currently be solved by computers

- i. Playing a decent game of table tennis
- ii. Buying a week 's worth of groceries at the market. [4 Marks]

Question TWO

(a)

- (i) What is an Expert System Shell and how is it used? (3mrks)
- (ii) What is the function of the Inference Engine in an Expert Systems? (3mrks)
- (iii) Why is the prototyping approach used in Expert System development? (2mrks)
- (iv) Why is knowledge sometimes difficult to extract from experts? (3mrks)
- (v) Describe briefly the four primary phases of building an Expert System (3mrks)

(b) What makes Lisp and Prolog the most widely used languages for developing AI programs (3mrk)

c). What is the widely used criterion for determining the success of an AI system? Explain the working of this criterion (3mrks)

Question THREE

a)

i) Framework for knowledge and manipulating knowledge of set of syntactic and semantic conventions that makes it possible to describe things. [4 Marks]

(ii). A knowledge representation language is defined by two aspects. State and explain the two aspects (4 marks)

- 1) Syntax
- 2) Semantics

iii) Translate the following into first-order logic (FOL) (12 marks)

- 1) Some dogs bark
- 2) All dogs have four legs
- 3) Everybody likes ice cream
- 4) All barking dogs are irritating

Question FOUR

- a) Briefly discuss the advantages of using Predicate Calculus for Knowledge representation [8 Marks]
- b) Write First Order Logic statements for the following:
 - a. All men except butchers like vegetarians
 - b. Everyone likes someone
 - c. Someone is liked by everyone [6 Marks]
- c) Briefly discuss why prolog is considered the best language for programing of KBS[8 Marks]

Question FIVE

- a) State the reasons of implementing KBS in various industries [10 marks]
- b) Briefly discuss the differences between KBS and MIS [6 Marks]
- c) Briefly describe how rules qualify to be a knowledge representation formalism [4 Marks]