TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN:
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
(BSIT J12)

ICS 2405: KNOWLEDGE BASED SYSTEM

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2014
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions. Attempt question **ONE (Compulsory)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One (Compulsory)

a) Explain the benefits and limitations of using knowledge based system **(10 marks)**

b) (i) What major stages or steps would you recommend to someone building a KBS?
(ii) In which stages would interaction with the expert be most crucial? **(8 marks)**

c) The TWO most popular methods of knowledge representation are production rules and frames. Explain these TWO methods giving examples and discuss the advantages and disadvantages of using them as a means of representing knowledge. **(12 marks)**

Question Two

Knowledge Based Systems (KBS) are developed to deal with particular application domain in which alternate techniques are unable to produce reliable and management solution:

a) Identify and discus FIVE aspects of human intelligence that could be used to characterize intelligent knowledge based system **(10 marks)**

b) Compare and contrast KBS with other conventional/traditional system in solving business problem **(10 marks)**

Question Three

a) Briefly discuss why Prolog is considered the best language for program of ICBS **(6 marks)**

b) A knowledge representation language is defined by two aspects. State EIGHT explain the two aspects:
   (i) Syntax
   (ii) Semantics **(4 marks)**

c) Translate the following into First Order Logic (FOL)
   (i) Some dogs bark
   (ii) All dogs have four legs
   (iii) Everybody likes ice cream
   (iv) All barking dogs are imitating **(10 marks)**

Question Four

a) Describe predicate calculus as knowledge representation formalisms. State the advantages and limitations of this knowledge representation formalism **(10 marks)**

b) Write a series of frames to describe modules in the school of computing science. Describe BIS 2040, BIS 1500 and BIS 1000 include FIVE features including the percentage of the module grade devoted to course work and to exam. Also show a default frame and how all the frames relate. **(10 marks)**

Question Five

a) Use an outline diagram to describe the structure of the KBS **(4 marks)**

b) Briefly explain the different application areas of Artificial intelligence **(10 marks)**

c) Explain the major Artificial Intelligence techniques **(6 marks)**