

**MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**P.O. Box 972-60200 – Meru-Kenya**

**Tel: 020-2069349, 061-2309217. 064-30320 Cell phone: +254 712524293, +254 789151411**

**Fax: 064-30321**

**Website:** [**www.must.ac.ke**](http://www.must.ac.ke) **Email:** [**info@must.ac.ke**](mailto:info@must.ac.ke)

**University Examinations 2016/2017**

FOURTH YEAR ,FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER TECHNOLOGY AND BACHELOR OF SCIENCE IN COMPUTER SCIENCE

**CCS 3425: KNOWLEDGE BASED SYSTEMS**

**DATE: DECEMBER 2016 TIME: 2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two***questions.

**QUESTION ONE (30 MARKS)**

1. Only certain tasks are applicable to KBS. Discuss four criteria to use when identifying tasks to use KBS (8 marks)
2. Differentiate the following terms (4 marks)
3. Validity and contradiction
4. Proposition logic and predicate calculus
5. Discuss any four typical tasks that a Knowledge system can perform (4 marks)
6. Use A\* algorithm to find the path form city S to city G by using the following functions

(10 marks)

1. List the persons who determines the success of expert system and development (4 marks)

**QUESTION TWO (20 MARKS)**

1. Outline any 2 inbuilt predicates in prolog (4 marks)
2. Two built-in predicates that can be used to load clauses into the Prolog database: Use a suitable example show how these clauses are applied (4 marks)
3. What are the phases involved in designing a problem solving agent? (6 marks)
4. Differentiate BFS & DFS (6 marks)

**QUESTIONTWO (20 MARKS)**

1. Explain the relationship between A\* algorithm and the Uniform Cost Search algorithm

(4 marks)

1. List the basic elements that are to be included in problem definition (2 marks)
2. Discuss FOUR benefits of Expert Systems (4 marks)
3. Using suitable examples, discuss the tow quantifiers used in knowledge representation (6 marks)
4. Define the following terms as used in AI search problem
5. State space
6. Start node
7. Path cost
8. Goal condition (4 marks)
9. Translate the following sentences into logic

¬ x. Dog xPurrs x

**QUESTION FOUR (20 MARKS)**

1. Discuss any four desirable features of any knowledge representation scheme (8 marks)
2. Write the following statement in wff (4 marks)
3. “Every man loves a woman.”
4. Everybody likes ice cream
5. Discuss the following knowledge representation schemes (8 marks)
6. Frames
7. Logic
8. Semantic nets
9. Production rules

**QUESTION FIVE (20 MARKS)**

Choose one of the following areas:

Machine Learning, Natural Language Processing or Robotics and write about 400 words on the topic under the following headings:

1. Definition
2. Explanation of key terms
3. Current examples and applications
4. Challenges (20 marks)