JULY 2017 EXAMINATION

COURSE CODE: CIT 474
COURSE CREDIT: 2
COURSE TITLE: INTRODUCTION TO EXPERT SYSTEMS
TIME ALLOWED: 2 Hours
INSTRUCTION: Answer question 1 and any other three (3) questions

QUESTIONS

1a. The current global economic crisis has led production managers to seek novel ways of sustaining their businesses. Assuming you are employed to deploy an expert system for any of these businesses:
  i. State at least six (6) essential components you would require in order to ensure that this innovative approach is effective? (6 marks)
  ii. The successful performance of the proposed expert system is critical. True or False? (1 mark)
  iii. Give a reason to support the answer you have provided for 1a.ii. (2 marks)

1b. A common expert system approach that has found application in various spheres of life is the blackboard approach. Write down eight (8) specific areas where they have been applied. (8 marks)

1c. The Natural Language Interface is said to be beneficial. True or False? (1 mark)

1d. Give three reasons to support the answer you have provided for 1c. (3 marks)

1e. Explain the term expert system within the context of a 'knowledge tool'. (4 marks)

[Total = 25 marks]

2. a. List and describe the generic components of a shell within the context of expert systems. (5 marks)
    b. Illustrate the generic components of a shell with the aid of a well-labelled diagram. (7 marks)
    c In spite of its numerous merits, expert systems are said to have a number of demerits. State any three of these demerits. (3 marks)
    [Total = 15 marks]

3. a. Explanation Facility is critical for identifying the roles of key words employed in expert systems. Based on this principle, state the main function of each of the following:

   i.   TRACE
   ii.   WHY   *2 marks each = 2 x 4 = (8 marks)*
   iii.   HOW
   iv.   WHAT-IF-

3b. Give a concise description of the following terms within the context of expert systems:
   i.   Grammar   (2 marks)
   ii.   Shell   (3 marks)
   iii.   Natural Language Interface   (2 marks)

[Total = 15 marks]

4a. The blackboard is often expressed as a global structure that is available to all Knowledge Sources. Give three reasons for this expression.   (6 marks)
4b. Following from the principle of interactivity, state four (4) ways of interacting in expert systems.   (4 marks)
4c. State the distinction between the forward chaining and the backward chaining..
                                           (2 marks)
 4d. Write down three (3) good reasons that justify the cost-effectiveness of expert systems when compared to human experts.   (3 marks)
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[Total = 15 marks]

5.   a. Write down the four (4) conditions that trigger daemons in expert systems.
                                           (4 marks)
      b.   Distinguish between the shallow and the deep knowledge in expert systems
) 2 marks
      c.   Exemplify this distinction in terms of Aisha eating beans and growing taller for the shallow knowledge.   ) 2 marks
      d.   Exemplify this distinction in terms of Aisha eating beans and growing taller for the deep knowledge.   ) 3 marks

      e.   Specify the role of the following:
   i.   User :   ) 2 marks
   ii.   Knowledge engineer   ) 2 marks

[Total = 15 marks]