



**NATIONAL OPEN UNIVERSITY OF NIGERIA,
PLOT 91, CADASTRAL ZONE, UNIVERSITY VILLAGE, JABI – ABUJA
FACULTY OF SCIENCES**

APRIL, 2019 EXAMINATION

COURSE CODE: CIT 474

COURSE CREDIT: 2

COURSE TITLE: INTRODUCTION TO EXPERT SYSTEMS

TIME ALLOWED: 2 Hours

**INSTRUCTIONS: ANSWER QUESTION ONE (1) AND ANY OTHER THREE (3)
QUESTIONS**

QUESTIONS

- 1a. Within the context of Expert Systems, goals are said to be established in a frame based system either as a method or daemon. State the main distinction between these two approaches of establishing a frame based system. (4 marks)
 - 1b. Give a concise description of the concept of slot with respect to a frame based system. (2 marks)
 - 1c. Write down four (4) common incidences in which daemons are triggered in expert systems. (4 marks)
 - 1d. With the aid of a well-labelled diagram, outline the stages involved in designing and building a rule engine. (8 marks)
 - 1e. State three (3) classic 'Rule Actions' in expert systems. (6 marks)
 - 1f. What is the key role of the working memory in a proposed system. (1 mark)
- [Total = 25 marks]**
- 2a. Enumerate seven (7) distinguishing features of programming languages that are required in expert systems. (7 marks)
 - 2b. State the main function of each of the following, based on the principle of explanation facility.

- i. TRACE
- ii. WHY
- iii. HOW
- iv. WHAT-IF-

2 marks each = 2 x 4 = (8 marks)

[Total = 15 marks]

3a. Give a concise explanation of shells as they relate to Expert Systems.) **3 Marks**

3b. With the aid of a detailed diagram, describe each component of a shell.) **12 Marks**

[Total = 15 marks]

4a. Expert systems are not cost-effective in comparison to human experts’.

i. Declare if the above statement is true or false. (1 mark)

ii. Write down three (3) good reasons to justify your response to question 4a.i. (6 marks)

4b. In spite of its numerous merits, expert systems have a number of demerits. State any four (4) of these demerits (8 marks)

[Total = 15 marks]

5a. State the main distinction between the shallow and the deep knowledge in expert systems) 4 marks

5b. Illustrate this distinction in terms of Bala practicing and winning a race for the shallow knowledge.) 2 marks

5c. Illustrate this distinction in terms of Bala practicing and winning a race for the deep knowledge.) 3 marks

5d. Outline three (3) main ways in which Expert Systems can assign confidence values. (6 marks)

[Total = 15 marks]