CS0601 Introduction to Artificial Intelligence

**Week 20**

**Expert Systems Part 1: basic concepts and structure**

**Part A: Multiple Choices**

1. What sort of knowledge can be categorised as a sequence of instructions or commands such as those presented in a cooking recipe or motor car repair manual? [Hint]

A. Inherited knowledge B. Procedural knowledge C. Expert knowledge D. Declarative knowledge

2. What sort of knowledge can be categorised as a set of conditions or rules such as those presented in regulations governing the eligibility for benefit payments?

A. Procedural knowledge B. Declarative knowledge C. Inherited knowledge D. Expert knowledge

3. What is the name of the process of extracting the knowledge from experts to build an expert system?

A. Knowledge transfer B. Modus ponens C. Knowledge elicitation D. Backward chaining

4. Which part of an expert system applies the facts of a particular case to the domain specific knowledge-base?

A. Knowledge-acquisition subsystem B. User interface C. Explanation subsystem D. Inference engine

5. Which of the following is (are) true:

A. A Rule can have multiple antecedents and a consequent can have multiple clauses

B. A Rule can only have one antecedent and a consequent can only have one clause

C. A Rule can have multiple antecedents but a consequent can only have one clause

D. A Rule can only have one antecedent but a consequent can have multiple clauses

6. When comparing between humans and computers, in general, which of the following is (are) false?:

A. Computers are better in computing

B. Humans are better in recognition

C. Computers are better in reasoning

D. Humans are better in learning

**Part B: Fill-in-the-blank/Short-answer Questions**

1. Knowledge is a \_\_\_Theoretical\_\_\_\_ or \_\_\_Practical\_\_\_ understanding of a subject or a domain

2. Knowledge is the \_\_\_\_sum\_\_\_ of what is currently known

3. A rule \_\_fires\_\_\_\_\_ when its condition part is \_\_satisfied\_\_\_\_\_ and its action part is \_\_\_executed\_\_\_\_

4. Rules can represent relations and recommendations. What else can rules represent? Please give some examples.

5. What are the three main tasks of designing an expert system?

**Part C: General Format Questions**

1. Brief explain who can be called an expert and what characteristics an expert should have

* It should have knowledge
* Decision making

2. Briefly explain the difference between procedural knowledge and declarative knowledge. Is it easy to use these two kinds of knowledge to do reasoning?

* procedural knowledge - Step

3. Expert systems are software packages designed to assist humans in situations in which an expert in a specific area is required. An expert system contains a knowledge base and an inference engine. Please briefly explain the concepts of knowledge base and an inference engine.

4. There are some main players in the development of an expert system, for example, the project manager and the end-users. Please list another two main players and briefly discuss their roles.

5. List two advantages and two disadvantages of the expert systems. Why?

**Advantages -** Gatherers informations can be reused

**Disadvantage -** Knowledge can’t be controlled