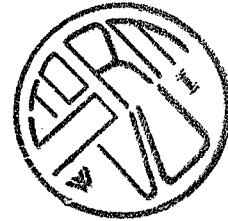Name _____   **Please use only these sheets for writing your answers**

Student number_____

PART I: Short Answers. Read the whole question, and answer each part of the question!

1.When we study human cognition we focus in two aspects: Individual cognition and distributed cognition.
What are the main differences between them?

2. Explain the main assumptions of the Human Information Processing approach

3. The first step in scientific research is to develop a **theory**. Can you explain briefly the three types of
theories used in scientific research?

4. Explain two advantages and two disadvantages of doing field studies (observations)

5. If the aim of my research is to determine the **causal relationships** between the characteristics of a system's interface and the user's performance. What kind of research method should I use?

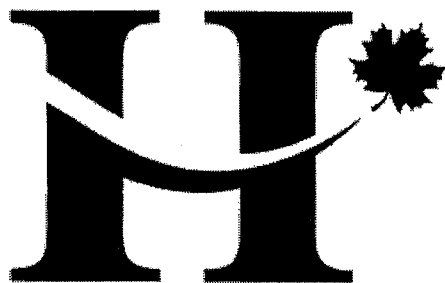6. Describe the steps in the Scientific method

7. Define absolute threshold

8. Define Vision and light

9. What are the main differences between the ecological perspective and constructivist perspective of perception?

10. Explain the Gestalt's law of similarity and draw an example.

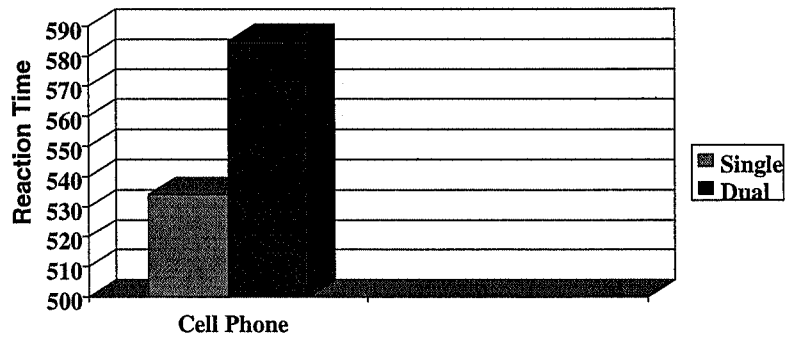11. Which gestalt principle(s) is being used? How can you tell?

12. Strayer et al (2003) performed an experiment with cell phones while driving. Two groups of people participated in the experiment:

- Group "single-task": subjects had to drive (in a simulator)
- Group "dual task": subjects had to drive (in a simulator) while having a cell phone conversation

Subjects had to react to red and green traffic signals. The following graph shows the results they obtained. From these results what can you conclude about driving while having a phone conversation? Why?

13. Explain the three memory systems describing the duration and capability of each of them.

14. How can you improve the capacity of Working memory?

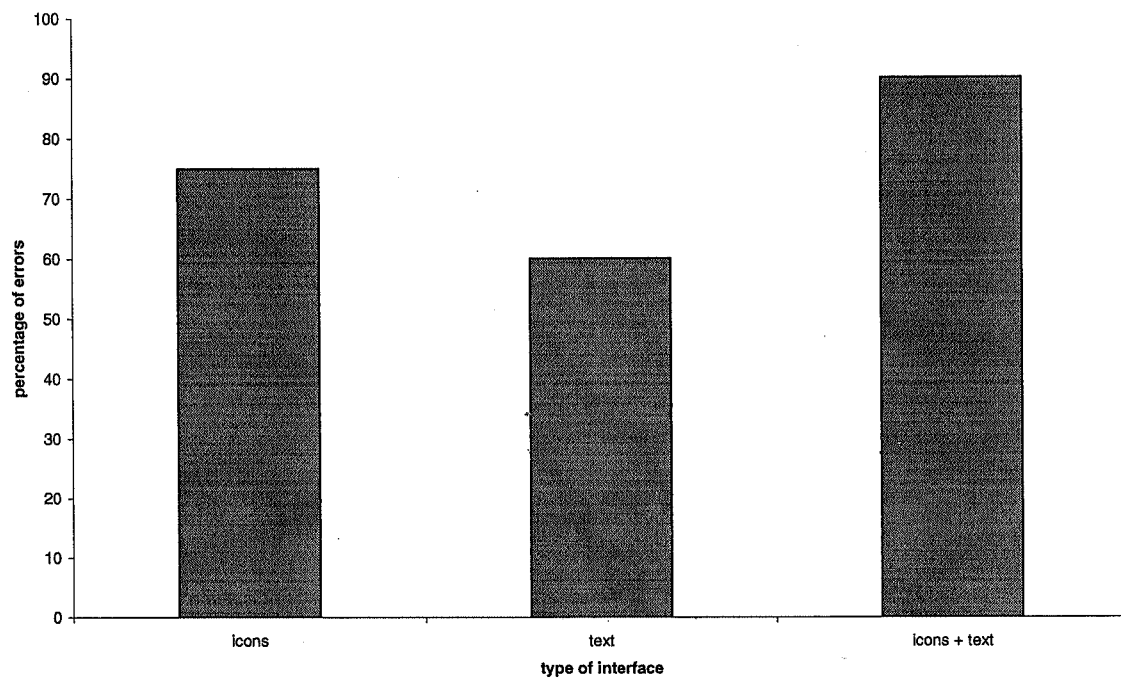15. What are the contents of semantic and episodic memory?

16. Define structural and functional mental models.

PART II. Answer the different questions in the exercise.

A group of researchers wanted to know if the use of icons in the user interface was better than text. To answer this question they performed an experiment with three different types of interfaces:

- Interface with icons only
- Interface with icons and text
- Interface with text only

A total of 18 subjects participated in the experiment. Their task was to work with the interface to solve a "simple task". The following graph shows the results they obtained.

Dr. Mari Carmen Puerta Melguizo / Dr. Gerrit C. van der Veer

Answer the following questions:

a. What is the independent variable and the levels (or conditions manipulated) of the independent variable?

b. What is the dependent variable?

c. What was the null hypothesis (H_0)?

d. According to the graph, what are the conclusions?