Human Information Processing

13-8-2003

Name _____

Student number ----------

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

1. Define Individual cognition and distributed cognition.

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

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

4. Explain what are verbal protocols and advantages and disadvantages they have.

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 research method should I use?

6. Define the types of interviews.

7. What are the differences between sensation and perception?

9. Define Stimulus and Sensorial Receptor.

10. Define differential threshold.

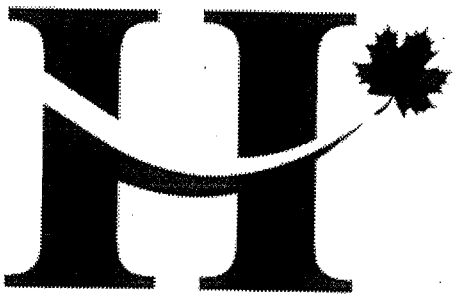
11. Classification of sensors.

12. According to the Trichromatic theory how do we perceive colors?

13. Define visual angle

14. Define two monocular depth cues.

15. In the following image, which gestalt principle(s) is/are being used? How can you tell?

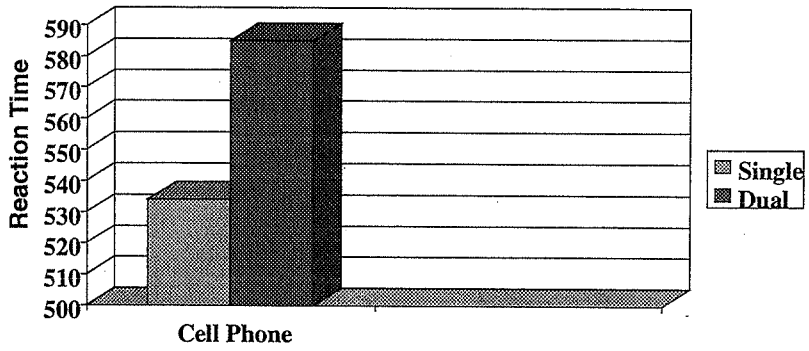


15. Carswell & Wickens (1988) defined four possible tasks that can be performed with tasks. Define them.

16. 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?



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

18. What are the contents of semantic, episodic and procedural memory? Explain them with examples.

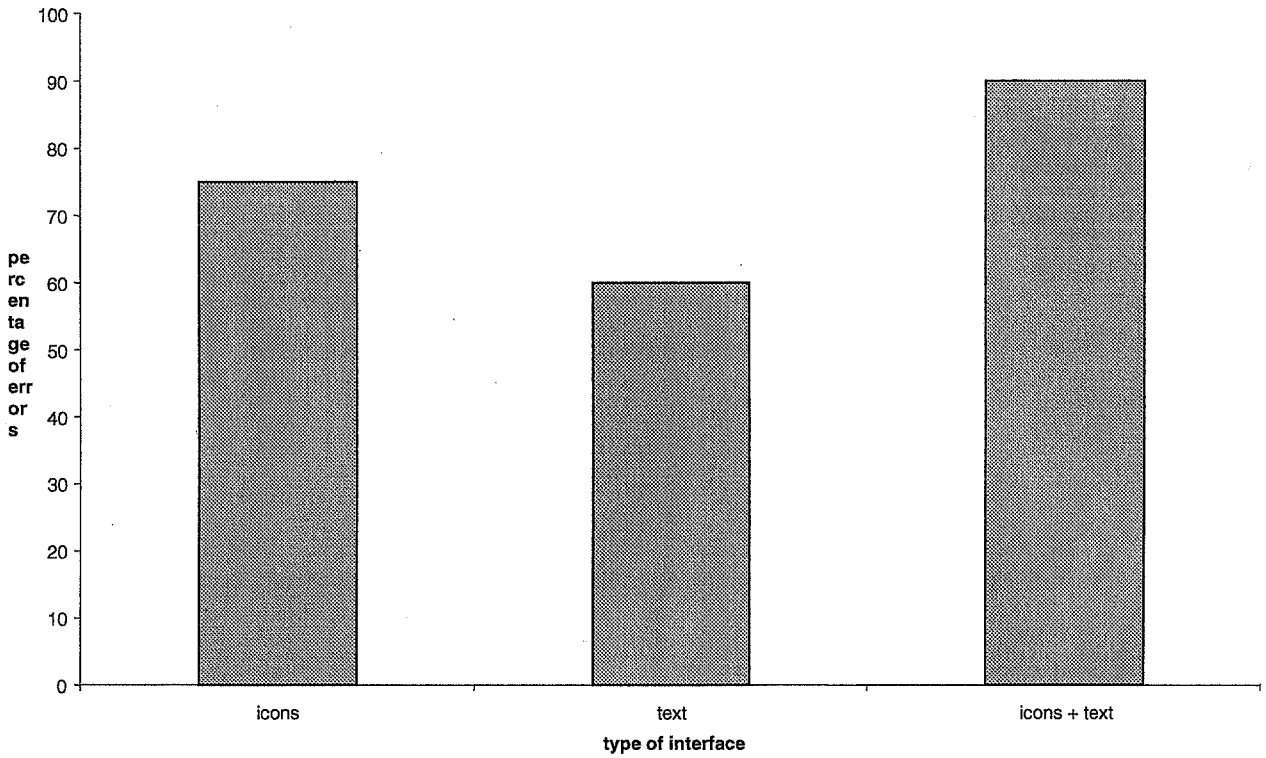
19. According to Norman (1983), what are the properties of mental models?

PART II. Exercise. Answer the different questions!!!

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

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

A total of 30 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.



Answer the following questions:

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

b. What is the dependent variable?

c. What was the null hypothesis (H_0)?

d. If the design is between-groups, how many subjects saw the interface with only icons? And if the design is within-groups how many subjects saw the interface with only icons?

e. According to the graph, what may be the conclusions (if the effect represented in the graph is statistically significant)?