

OLLSCOIL NA hÉIREANN, GAILLIMH  
NATIONAL UNIVERSITY OF IRELAND, GALWAY

SEMESTER I EXAMINATIONS 2000-2001

3<sup>RD</sup> INDUSTRIAL ENGINEERING AND INFORMATION SYSTEMS

*INFORMATION SYSTEMS ERGONOMICS IE 323*

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**Instructions:**

**Time Allowed: 2 Hours**

**Attempt: 3 Questions**

**Show all your work clearly**

**Question 1.**

**Marks**

Write short notes on **four** of the following:

**8.33\*x4**

- (a) Evaluation research
- (b) Human-machine systems
- (c) Skill-based, Rule-based and Knowledge-based behaviour
- (d) Signal and warning lights
- (e) Relative discrimination of auditory displays
- (f) Allocation of functions in manufacturing

**Question 2.**

**Marks**

Discuss the concept of attention as presented by Sanders and McCormick (1992) in the context of the information-processing model of Wickens (1984).

**33.33\***

**Question 3.**

**Marks**

Discuss the role of human factors / ergonomics in the systems development process.

**33.33\***

**Question 4.**

**Marks**

Answer **three** of the following:

**11.1\*x3**

- (a) Write a short note on Compatibility. Use appropriate examples to illustrate your answer.
- (b) Outline the methods for evaluating symbolic displays.
- (c) Distinguish between contrast sensitivity, spatial frequency, and visual acuity.
- (d) A display is to be used to measure flow rate in a pipe. The maximum flow rate possible is 200 litres per second. The scale must be read to the nearest .5 of a litre per second. Space is limited on the panel that the display is to be located on. Design the display following recommended design practices.

**Question 5.**

**Marks**

Explain in detail **one** approach for classifying human error. Use **16.66\*** examples where appropriate to illustrate your answer.

What are the main theories of accident causation? What are the strengths **16.66\*** and weaknesses of each?

**References**

Sanders, M.S., & McCormick, E.J., (1992), *Human Factors in Engineering and Design*. McGraw-Hill Inc: Singapore  
Wickens, C., (1984), *Engineering Psychology and Human Performance*. Merrill: Columbus OH