

**OLLSCOIL NA hÉIREANN, GAILLIMH  
NATIONAL UNIVERSITY OF IRELAND, GALWAY**

**SUMMER EXAMINATIONS 1999-2000**

**ERGONOMICS IE520**

**M.Sc OCCUPATIONAL HEALTH AND ERGONOMICS**

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Mr E.F. Fallon  
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**Time Allowed: 3 Hours**

**Answer 5 Questions**

**Use separate answer books for each Section**

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**Section A. Information Systems Ergonomics**

Question	Marks
<p><b>Q.1</b> Write short notes on <u>four</u> of the following:</p> <ul style="list-style-type: none"> <li>• Compatibility</li> <li>• Divided attention</li> <li>• Measurement of mental workload</li> <li>• Spatial frequency</li> <li>• Visibility, legibility and readability</li> <li>• Principles of arrangement of components</li> </ul>	<b>5x4</b>
<p><b>Q.2</b> The human factors (or ergonomics) approach to job design considers worker's perceptual, cognitive and physical capabilities in the design of jobs. Discuss the strengths and weakness of this approach.</p>	<b>20</b>
<p><b>Q.3.</b> (a) What do you understand by the term allocation of functions?</p>	<b>8</b>
<p>(b) Discuss the context of use of allocation of functions methods</p>	<b>12</b>

- Q.4** (a) Explain the meaning of the following terms / concepts **8**
- Quantitative readings
  - Qualitative readings
  - Check readings
  - Situation awareness
- (b) Under what general conditions are auditory displays preferable to visual displays? **6**
- (c) List some things that will increase the detection of an auditory signal in noise and briefly explain how this occurs? **6**

### **Section B: Physical Ergonomics**

- Q.5** Write short notes on **four** of the following: **5x4**
- The ergonomics of computer keyboards
  - Terms used in the description of movement and joint ranges in anthropometrics
  - Posture of the head and neck
  - 12 hour shift systems
  - Hand-arm vibration syndrome
  - Lighting and computer workstations
- Q.6** Discuss the relationship between Task Analysis and posture assessment tools such as RULA and OWAS. Refer to more than one task analysis technique in your answer. **20**
- Q.7** The Safety, Health and Welfare at Work (General Applications) Regulations 1993 Eighth and Ninth Schedules lays down specific reference factors with respect to the manual handling of loads. Discuss these factors in the context of manual materials handling risk assessment. Use examples where appropriate to illustrate your answer. **20**
- Q.8** (a) Although some international discord exists in relation to cumulative trauma disorders (CTD's)/work related upper limb disorders (WRULD's), there is general agreement on the main occupational factors causing or aggravating these illnesses. Discuss these factors. **12**
- (b) Describe a proactive intervention that you consider would help in counteracting these risk factors. **8**