

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**FACULTY OF INDUSTRIAL TECHNOLOGY**

**DEPARTMENT OF INDUSTRIAL & MANUFACTURING ENGINEERING**

**Bachelor of Engineering Honours Degree Industrial & Manufacturing Engineering**

**Ergonomics and Industrial Safety II - TIE 1104**

**SUPPLEMENTARY EXAMINATION OCTOBER 2009**

**Time allowed: 3hrs**

**Instructions to candidates**

1. Answer **FIVE** questions
2. All questions carry 20 marks each
3. Question **One** is Compulsory

**QUESTION 1**

The following is a list of industrial hazards that workers are generally exposed to:

- a) industrial effluent
- b) industrial toxic
- c) industrial radiation
- d) industrial noise

For each of the above;

- a) describe what it is [5]
- b) how it affects workers [5]
- c) what companies should do to protect their employees? [5]
- d) how should government ensure compliance with regulations? [5]

**QUESTION 2**

Explain the following terms as relating to ergonomics

- i) anthropometry [5]
- ii) fatigue [5]
- iii) biomechanics [5]
- iv) work rest cycles [5]

### QUESTION 3

You are HR manager of a company and tasked with improving the welfare of your employees. One such assignment is to draft possible legislation, 2 each for the following categories of workers

- a) albinos persons
- b) crutches bound persons
- c) wheel chair bound persons

Legislation to cover

- a) immediate working environment [10]
- b) general mobility within the company [5]
- c) availability of general facilities such as ablutions [5]

### QUESTION 4

The study of ergonomics is important and essential not only for industry but more so for the economy of the country in general

- a) How do individuals/citizens benefit from this knowledge explain 4 reasons [[10]
- b) How does the country and the economy in particular benefit from this? List and explain two reasons for your answer. [10]

### QUESTION 5

WMSD's and CTD's are common disorders that occur among workers as a result of some working habits.

- a) explain the meanings of these terms. [4]
- b) state the causes that lead to their development [8]
- c) describe the risk factors that are associated with and responsible for their development. [8]

### QUESTION 6

“The design and layout of a work place contributes quite significantly towards improving worker safety and health”

- a) Discuss the above statement, critically analyzing specific features found in such a workplace set up. [10]
- b) What sort of measures should workers take in order to minimize stress and fatigue especially when:
  - i) doing highly repetitive work
  - ii) working in a very cold temperature environment
  - iii) working in a windy environment
  - iv) working while in a sleeping on the back position [10]

**End of Exam**