

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF INDUSTRIAL TECHNOLOGY

**DEPARTMENT OF INDUSTRIAL AND MANUFACTURING ENGINEERING
MASTER OF MASTERS IN MANUFACTURING SYSTEMS AND OPERATIONS
MANAGEMENT**

SUPPLEMENTARY EXAMINATIONS OCTOBER 2009

ENVIRONMENTAL CONSCIOUS MANUFACTURING –TIE 6221

Instructions

Duration: 3 Hours

Answer any FIVE Questions.

Each Question carries 20 marks.

Total Marks: 100

QUESTION 1.

Discuss the implications of doing and not doing an Environmental Impact Assessment for the small scale manufacturing industries. [20]

QUESTION 2

Outline the main stages in setting up an Environmental Management System (EMS) and using appropriate examples, discuss the role of an EMS in an enterprise. [20]

QUESTION 3

Assess the ways in which Environmental Conscious Manufacturing can meet the goals of Sustainable Development. [20]

QUESTION 4

Explain the following terms in relation to Sustainable development

- i. Life cycle analysis [8]
- ii. Pollution prevention [6]
- iii. Material substitution [6]

QUESTION 5

- i. Define cleaner production [2]
- ii. What are the objectives of cleaner production? [4]
- iii. What are the benefits of cleaner production? [8]
- iv. What measures should be taken to achieve cleaner production [6]

QUESTION 6

Identify and explain waste minimization techniques [20]

END OF EXAM