

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY



FACULTY OF INDUSTRIAL TECHNOLOGY

DEPARTMENT OF INDUSTRIAL AND MANUFACTURING ENGINEERING

MASTERS OF ENGINEERING IN MANUFACTURING ENGINEERING AND OPERATIONS MANGEMENT

SUPPLEMENTARY EXAMS

COURSE : ENVIRONMENTAL CONSCIOUS
MANUFACTURING
CODE : TIE 6221
DATE : JULY 2013
DURATION : 3 HOURS

INSTRUCTIONS AND INFORMATION TO CANDIDATE

1. Answer any other **five (5)** questions
 2. All other questions carry **20 marks** each
 3. This paper contains seven (7) questions
 4. There are three (3) pages printed
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QUESTION 1

- a) Discuss those aspects which are affected by a manufacturing environment. [5]
- b) How are these aspects of environment affected? [5]

- c) Explain the following terms in relation to Environmental Conscious Manufacturing;
 - i. Green environment [2]
 - ii. Eco-efficiency [2]
 - iii. Green procurement [2]
 - iv. Energy efficiency [2]
 - v. Design for environment [2]

QUESTION 2

- a) Developing world thinks that first world developed faster because they were neglecting environmental issues. The people in the developed world are encouraging developing world to first consider the environment first. Discuss [10]
- b) *“Sustainable Development is a controversial term” Discuss this statement* [5]
- c) Sustainable development can be used as a vehicle to achieve prosperity, Discuss. [5]

QUESTION 3

- a) Identify and explain the various techniques of environmental pollution control. [10]
- b) Discuss the main pillars of Agenda 21 [10]

QUESTION 4

- a) Discuss the elements of the ISO 14001 Standard [8]
- b) Explain the following terms in relation to Sustainable Development
 - i. Life Cycle Analysis [4]
 - ii. Pollution Prevention [4]
 - iii. Material Substitution [4]

QUESTION 5

- a)
 - i. Define Cleaner Production [2]
 - ii. What are the objectives of Cleaner Production? [2]
 - iii. What are the benefits of Cleaner Production? [2]
 - iv. What measures should be taken to achieve Cleaner Production [4]
- b) What would be the challenges when introducing Cleaner Production in a Zimbabwean company? [10]

QUESTION 6

- a) Identify and explain waste minimization techniques [8]
- b) Discuss the waste minimization strategies for solid, fluid and dust effects on the environment in Zimbabwean Industry. [6]
- c) Discuss differences and similarities if any between Environmentally Conscious Manufacturing and a Waste Management System [6]

QUESTION 7

You have been promoted into the post of Production Manager and you want to convince top management to implement Environmental Conscious Manufacturing, in this view discuss the monetary aspect attached to implementing such a system [20]

END OF EXAM