



MACHAKOS UNIVERSITY

University Examinations For 2020/2021 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

MASTER OF ENVIRONMENTAL SCIENCE

ENS 802: INDUSTRIAL ECOLOGY AND SUSTAINABLE DEVELOPMENT

DATE: 14/6/2021

TIME: 8.30-11.30 AM

INSTRUCTIONS: Answer Question **ONE** and any other **THREE**

QUESTION ONE (COMPULSORY) (15 MARKS)

Using examples, explain the concept of industrial symbiosis and demonstrate its role in achieving sustainable development.

QUESTION TWO (15 MARKS)

Discuss the justification of using Life Cycle Analysis (LCA) in assessing environmental impacts of industrial processes and products

QUESTION THREE (15 MARKS)

A paper manufacturing company based in Webuye has approached you as an environmental expert to consult on how they can tackle the organization's environmental impacts by initiating and implementing ISO 14001. Discuss how you would undertake this exercise.

QUESTION FOUR (15 MARKS)

Discuss cleaner production strategies that can be employed to reduce negative environmental impacts associated with manufacturing of cement.

QUESTION FIVE (15 MARKS)

Citing examples, critically evaluate the treatment and disposal methods for industrial wastes as practiced in developing countries.