LAIKIPIA UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST SEMESTER 2025/2026 ACADEMIC YEAR

THIRD YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN ENVIRONMENTAL SCIENCE

ENSC 316: ENVIRONMENTAL POLLUTION AND CONTROL

STREAM: R ***TIME: 2 HRS***

DAY: TUESDAY [11.30 – 13.30 P.M] ***DATE: 03/02/2026***

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

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INSTRUCTIONS:

- Answer question **ONE** and ANY **TWO** other questions

QUESTION ONE (30 MARKS)

a) Explain how environmental degradation differs from environmental pollution, using one hypothetical example to illustrate the distinction. **(2 Marks)**

b) Describe two processes that lead to the formation of secondary air pollutants, and give one example of a secondary pollutant formed in each process. **(3 Marks)**

c) Nairobi experiences frequent smog during the dry season. Identify two major sources and two strategies to reduce air pollution at the city level. **(3 Marks)**

d) Geothermal power plants release hydrogen sulfide. Explain two human health risks and two ecosystem effects. **(3 Marks)**

e) A proposed wind farm requires clearing a natural forest. Discuss two potential environmental trade-offs and two ways to mitigate them. **(3 Marks)**

f) Identify two major solid waste disposal methods in urban Kenya and evaluate one environmental impact of each. **(2 Marks)**

g) Explain how environmental laws and regulations help reduce pollution, and give one limitation of enforcement in Kenya. **(3 Marks)**

h) Explain why the Montreal Protocol is widely considered the most successful environmental treaty and link its success to ozone layer recovery. **(4 Marks)**

i) List two advantages and two limitations of adopting biomass energy as an alternative fuel in Kenya. **(2 Marks)**

j) Explain how poverty and economic development pressures can simultaneously contribute to environmental pollution in Kenya. **(2 Marks)**

k) A multinational company wants to implement tradable pollution permits in its Kenyan operations. Explain how this market-based instrument works and one potential limitation in the local context. **(3 Marks)**

QUESTION TWO (20 MARKS)

a) Discuss the major forms of water pollution in Kenya. **(10 Marks)**

b) Propose realistic improvements to Kenya's water pollution management framework. **(10 Marks)**

QUESTION THREE (20 MARKS)

a) Critically assess the use of market-based instruments in pollution control. **(10 Marks)**

b) Discuss challenges of implementing market-based instruments (MBIs) in developing countries.

(10 Marks)

QUESTION FOUR (20 MARKS)

a) Assess the role of alternative sources of fuel in reducing environmental pollution. **(10 Marks)**

b) Using examples, explain the technical, economic, and social challenges to the adoption of alternative sources of fuel in Kenya. **(10 Marks)**

QUESTION FIVE (20 MARKS)

A cement factory near Nairobi has been repeatedly fined for exceeding air pollutant limits. Using this scenario:

a) Analyse the environmental, health, and social consequences of its emissions. **(3 Marks)**

b) Recommend three technological interventions to reduce dust and gaseous emissions. **(3 Marks)**

c) Suggest **two** policy or regulatory measures to improve compliance. **(4 Marks)**

d) Discuss how stakeholder engagement could support environmental improvements **(10 Marks)**