



# UNIVERSITY OF EMBU

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2017/2018 ACADEMIC YEAR

SECOND SEMESTER EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE  
ANALYTICAL CHEMISTRY AND INDUSTRIAL CHEMISTRY

SCE 201: INTRODUCTION TO ENVIRONMENTAL CHEMISTRY

DATE: APRIL 10, 2018

TIME: 2:00-4:00PM

INSTRUCTIONS:

Answer Question ONE and ANY other TWO Questions

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## QUESTION ONE (30 MARKS)

- a) Explain the following terms (10 marks)
- i) Luminescence reaction
  - ii) Environmental chemistry
  - iii) Nutrient budget
  - iv) Ozone layer
  - v) Biochemical oxygen demand
- b) Explain four consequences of ozone layer depletion (4 marks)
- c) Explain two human effects on the biogeochemical cycles (4 marks)
- d) Explain any two properties of water that makes it essential for life. (4 marks)
- e) Explain why carbon monoxide gas is more dangerous than carbon dioxide gas. (2 marks)
- f) Explain three application of green chemistry on day to day life (4 marks)
- g) Explain two effects of radioactivity in the atmosphere (2 marks)
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**QUESTION TWO (20 MARKS)**

- a) The atmosphere is a gaseous mixture of air surrounding the atmosphere. Explain the five layers of the atmosphere (10 marks)
- b) Ozone layer is a concentration of ozone molecules in the stratosphere. Explain how CFCs cause ozone layer depletion. (10 marks)
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**QUESTION THREE (20 MARKS)**

- a) Explain five ways in which human activities influence the nutrient cycle (15 marks)
- b) With equations, explain the processes that contribute to deoxygenation of water. (5 marks)

**QUESTION FOUR (20 MARKS)**

- a) Biogeochemical cycles are important aspect of environmental chemistry. Discuss
- i) The phosphorus cycle (10 marks)
- ii) The carbon cycle (10 marks)

**QUESTION FIVE (20 MARKS)**

- a) Pollution of water originates from human activities. Explain four remediation methods to water pollution. (8 marks)
- b) Hydrological cycle describes the storage and movement of water in the universe. Explain the processes of this cycle. (12 marks)

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