



KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER
SPECIAL/SUPPLEMENTARY EXAMINATIONS
FOR THE DEGREE OF BSC (CHEMISTRY)

COURSE CODE: SCH 350

COURSE TITLE: ENVIRONMENTAL CHEMISTRY

DATE: 10/2/21

TIME: 8-10Am

INSTRUCTIONS TO CANDIDATES
Time: 2 Hours

Answer question ONE and any other TWO of the remaining

KIBU observes ZERO tolerance to examination cheating

QUESTION ONE (30 MARKS)

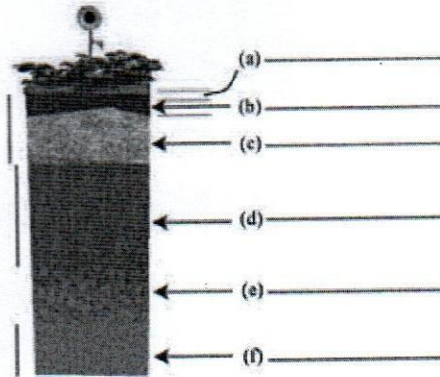
- a) Define the following terms (5 marks)
- i. Environmental Chemistry
 - ii. Lithosphere
 - iii. Hydrological cycle
 - iv. Noctilucent Clouds
 - v. Ozone hole
- b) List four solutions of light pollution (4 marks)
- c) Take the dry adiabatic lapse rate to be 10 °C per 1000 m. A radiosonde has measured the temperature of the atmosphere to be 30 °C on the ground and 15 °C at an altitude of 1000 m. Comment on the stability of the atmosphere (3 marks)
- d) Briefly discuss planetary winds (5 marks)
- e) State the role of soil (5 marks)
- f) Highlight two importance of atmospheric stability (4 marks)
- g) Define photochemical reaction and give simplified photochemical reaction for ozone (4 marks)

QUESTION TWO (20 MARKS)

- a) Biogeochemical cycles is of importance to environment
- i. Define biogeochemical cycles (2 marks)
 - ii. Discuss nitrogen cycle (3 marks)
 - iii. Discuss phosphorous cycle (3 marks)
- b) Explain the synergy that exists between bacteria in plants relative to nitrogen fixation. (4 marks)
- c) Discuss the following concepts as applied in Environmental Chemistry
- i. El Nino phenomenon (4 marks)
 - ii. Coriolis Effect (4 marks)

QUESTION THREE (20 MARKS)

- a) Name composition of soil and their relative abundance (4 marks)
- b) In the following illustration please fill in the missing names of the master horizons in the blanks labelled (a) through (f) (6 marks)



- c) State and explain five factors that influence soil formation (10 marks)

QUESTION FOUR (20 MARKS)

- a) Put these layers of the atmosphere in order from the Earth's surface outward (5 marks)
- i. -----Thermosphere
 - ii. -----Troposphere
 - iii. -----Exosphere
 - iv. -----Stratosphere
 - v. -----Mesosphere

- b) Match the name of the layer to its description (5 marks)

1. Thermosphere	i. The middle, coldest layer
2. Troposphere	ii. The hottest layer
3. Exosphere	iii. The layer where weather happens
4. Stratosphere	iv. Where the ozone layer is found
5. Mesosphere	v. Where astronauts 'feel' the atmosphere begins

- c) Define environmental segments (2 marks)
- d) State and discuss environmental segments (8 marks)

QUESTION FIVE (20 MARKS)

- a) List 3 ways that water becomes polluted (3 marks)
- b) Mention three effective ways to clean up polluted water. Explain your answers (9 marks)
- c) Discuss Kyoto Protocol (4 marks)
- d) State four solution of soil pollution (4 marks)