



# KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS  
2020/2021 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER  
MAIN EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF CHEMISTRY

**COURSE CODE:** SCH 451

**COURSE TITLE:** ATMOSPHERIC CHEMISTRY

**DURATION:** 2 HOURS

**DATE:** 14/10/2021

**TIME:** 2:00-4:00 PM

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### INSTRUCTIONS TO CANDIDATES

- Answer **QUESTION ONE** (Compulsory) and any other two (2) Questions.
- Indicate **answered questions** on the front cover.
- Start every question on a new page and make sure question's number is written on each page.

This paper consists of 3 printed pages. Please Turn Over



KIBU observes ZERO tolerance to examination cheating

**QUESTION ONE. COMPULSORY**

- [a] Define the term air pollution and state any two effects of air pollution 4mrks
- [b] State the different forms of oxides of Nitrogen that are found in the atmosphere 3mrks
- [c] List Four sources from which CO<sub>2</sub> is released into the atmosphere 4mrks
- [d] State three ways of monitoring air pollution 3mrks
- [e] Explain how volcanic eruptions affect the atmosphere 2mrks
- [f] Differentiate between natural and anthropogenic sources of air pollution 3mrks
- [g] Explain the health effects associated with CO<sub>2</sub> 2mrks
- [h] Explain the term "Ozone hole". What role do nitrogen compounds play in ozone hole formation? 3mks
- [i] Using examples, differentiate between primary pollutants and secondary pollutants 4mrks
- [j] Explain how oxidation of methane produce ozone 2mrks

**QUESTION TWO.**

- [a] Describe five ways in which particulates in the environment can be controlled 10mrks.
- [b] Explain in details five health effects of ozone 10mrks.

**QUESTION THREE**

- [a] State the different forms of oxides of Nitrogen that are found in the atmosphere 3mrks
- [b] Explain the harmful effects of oxides of nitrogen to the environment 8mrks
- [c] State and explain the health effects caused by heavy metals 9mrks.

**QUESTION FOUR.**

- [a] Describe in details the various control methods of gaseous pollutants for oxides of S, N, C.....10mrks
- [b] List four pollutants designated under clean air act and identify the major sources and health effects.....10mrks

**QUESTION FIVE**

- [a]. Describe the formation and removal of  $\text{NO}_x$  in the stratosphere 6mrks
- [b]. State two major ways by which human activities contribute to the addition of carbon dioxide to the atmosphere 2mrks
- [c]. Explain the following terms
- I. Greenhouse gas 1mark
  - II. Acidic oxide 1mark
- [d]. State the effects caused by acid rain to the environment 5mrks
- [e] CFCs are a group of substances known to cause damage to the ozone layer
- (i) State two effects of damage of ozone layer 2marks
  - (ii) Give one former major use of CFCs 1mark
  - (iii) Give an example of a CFC 1mark
  - (iv) Identify a group of compounds used as ozone friendly CFC replacements 1mark