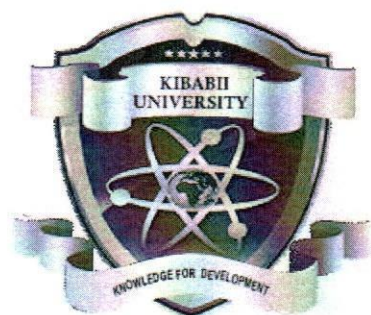


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# KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS  
2019/2020 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:** 6<sup>TH</sup> NOVEMBER, 2020

**TIME:** 2:00PM-5:00PM

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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



Failure to follow these instructions serves ZERO towards the examination.

**QUESTION ONE.COMPULSORY**

- [a] Describe the process that lead to particulate formation.....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] Describe the mechanism of poisoning by CO.....3mrks
- [e] Outline briefly the various types of interactions of toxic substances.....5mrks
- [f] Explain the health effects associated with CO<sub>2</sub>.....5mrks
- [g] Describe the effects of air pollution on the environment and human health.....4mrks
- [h] State two reasons why the stratosphere is highly vulnerable.....2mrks

**QUESTION TWO.**

- [a] The atmosphere plays an essential role asa protectiveshield. Describe briefly how this is achieved.....10mrks.
- [b] Give a detailed explanation(with the help of equations) how photochemical smog is formed.....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 effects caused by acid rain to the environment.....9mrks.

**QUESTION FOUR.**

- [a] Describe in details the various control methods of gaseous pollutantsfor 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 NO<sub>x</sub> in the stratosphere.....6mrks
- [b].With the help of chemical equations.explain how the following constituents of tropospheric reactions are formed and removed.
  - I. Ozone .....3mrks
  - II. Hydroxyl radical "OH" .....3mrks.

[c]. Explain the following terms

- I. Dissolved organic matter.....1 1/2 marks
- II. Humic substances.....1 1/2 marks

[d]. State the effects caused by acid rain to the environment.....5 marks