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# KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS  
2019/2020 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER  
SPECIAL/SUPPLEMENTARY EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF CHEMISTRY

**COURSE CODE:** SCH 451

**COURSE TITLE:** ATMOSPHERIC CHEMISTRY

**DURATION:** 2 HOURS

**DATE:** 17/2/2021

**TIME:** 11:00-1:00PM

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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



KIBU observes ZERO tolerance to examination cheating

### 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 as a protective shield. 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 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].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 1/2marks

II. Humic substances..... 1 1/2marks

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