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:6TH NOVEMBER, 2020 **TIME: 2:00PM-5:00PM**

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

...reserves 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_2 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_2.....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.....1Omrks

[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_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.....11/2marks
II. Humic substances.....11/2marks

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