INTERNATIONAL UNIVERSITY OF EAST AFRICA

'Learning to Succeed'

FACULTY OF SCIENCE AND TECHNOLOGY

END OF SEMESTER EXAMINATIONS - APRIL 2025

PROGRAMME: BSEM

YEAR/SEM: YEAR 1/SEMESTER 2

COURSE CODE: BSE1203

NAME: ATMOSPHERIC PROCESSES

DATE: 2025-04-15

TIME: 9:00AM-12:00PM

INSTRUCTIONS TO CANDIDATES:

1. Read the instructions very carefully
2. The time allowed for this examination is STRICTLY three hours
3. Read each question carefully before you attempt and allocate your time equally between all the Sections
4. Write clearly and legibly. Illegible handwriting cannot be marked
5. Number the questions you have attempted
6. Use of appropriate workplace examples to illustrate your answers will earn you bonus marks
7. Any examination malpractice detected will lead to automatic disqualification.

DO NOT WRITE ANYTHING ON THE QUESTION PAPER

Section A Attempt only one question from this section

Question 1:

a) Compare the second and the third atmospheres. (5marks)
b) Identify the regions of the electromagnetic spectrum. (5marks)
c) How are greenhouse gases related to global warming? (5marks)
d) Why do seasons occur? (5marks)
e) Outline the consequences of ozone layer depletion. (5marks)
f) Define atmospheric stability and briefly discuss its general effect on fire behaviour. (5marks)
g) Outline the gas and non-gas atmospheric constituents. (5marks)
h) Explain the three modes of energy transfer. (5marks)

Section B Attempt only three (3) questions from this section

Question 1:

(a) Define the concept of atmospheric stability and explain its significance. (10 marks)
(b) Discuss the role of temperature inversions in air pollution episodes. (10 marks)

Question 2:

(a) Describe the Coriolis effect and its impact on global wind patterns. (10 marks)
(b) Explain how the Coriolis effect influences the formation of cyclones and anticyclones. (10 marks)

Question 3:

(a) Describe the composition and structure of the Earthâ??s atmosphere. (10 marks)
(b) Explain how atmospheric temperature changes with altitude and its environmental implications. (10 marks)

Question 4:

(a) Identify the different modes of energy transfer . (6 marks)
(b)Identify the regions of the electromagnetic spectrum. (10 marks)
c) Differentiate between radiance and irradiance (4marks)

Question 5:

(a) Discuss the greenhouse effect and its role in regulating Earthâ??s temperature. (10 marks)
(b) Explain the difference between natural and anthropogenic greenhouse gases. (10 marks)

Question 6:

Discuss how the interaction of the different elements of weather influences the climate system. (20marks)