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:
TIME:

INSTRUCTIONS TO CANDIDATES:

SECTION A

Attempt only one question from this section

Question 1:

The world has been experiencing an increase in global temperatures.

(a) Explain the causes of global warming. (10 marks)
(b) Discuss the evidences of global warming.
(10 marks)

c) Discuss the impacts of global warming on livelihoods. (10 marks)

d) Suggest remedies to global warming. (10 marks)

Question 2:

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

Question 2:

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

Question 3:

(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 4:

(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 5:

(a)Using an illustration, discuss the earth’s energy budget. (10 marks)
(b) How do anthropogenic activities alter the earth’s energy budget? (10 marks)

Question 6:

(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 7:

(a) Describe the key processes involved in the hydrological cycle. (10 marks)
(b) Discuss the impact of climate change on the hydrological cycle. (10 marks)

Question 8:

(a) Explain the structure of the atmosphere. (10 marks)
(b)Why do weather and seasons occur? (10 marks)

Question 9:

Uganda, a country known for its agricultural sector, is increasingly experiencing the effects of climate change, posing significant challenges to its food security and rural livelihoods. As an environmentalist working with FAO, analyse;

a) a) The causes of climate change in your country (10marks).

b) b) The impact of climate change on agriculture in your country (10marks).

Question 10:

(a) Define ozone depletion and its causes. (10 marks)
(b) Discuss the environmental and health effects of ozone layer depletion. (10 marks)

Question 11:

(a) Explain how human activities contribute to changes in atmospheric composition. (10 marks)
(b) Discuss the potential impacts of these changes on global climate patterns. (10 marks)

Question 12:

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