



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A CONSTITUENT COLLEGE OF JKUAT)

(A Centre of Excellence)

Faculty of Applied and Health Sciences

DEPARTMENT OF **ENVIRONMENT AND HEALTH SCIENCE**

DIPLOMA IN ENVIRONMENTAL SCIENCES

(DES 12S)

AES 2105: ATMOSPHERIC AND CLIMATE SCIENCE

SPECIAL/SUPPLEMENTARY: EXAMINATIONS

SERIES: February 2013

TIME: 2 HOURS

INSTRUCTIONS:

You should have the following for this paper

- *Answer booklet*

This paper consists of **FIVE** questions.

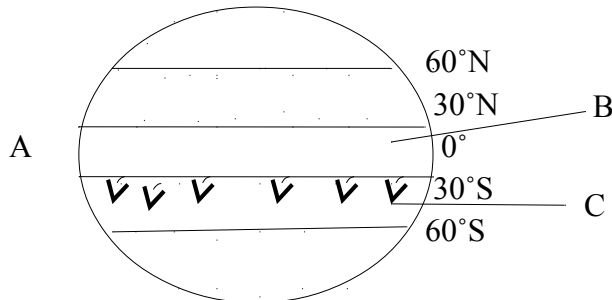
Answer Question **ONE (compulsory)** and any other **TWO** questions

This paper consists of 3 PRINTED pages

Question ONE

- a) Define the following terms
- (i) Adaption in climate change (2marks)
 - (ii) Mitigation in climate change (2marks)
 - (iii) Coriolis effect (2marks)
 - (iv) Sensible heat and latent heat (4marks)

b)



The above figure shows the global air circulation system. Use it to answer the following questions

- (i) Name wind C and air Cell A (2marks)
 - (ii) Describe the movement of wind B (4marks)
 - (iii) Explain air circulation A (4marks)
- b) (i) Explain the significance of the stratosphere layer in the atmosphere (2marks)
- (ii) How does Altitude and Latitude affect the temperature of a region (4marks)
- (iii) Calculate the heat transfer through a flat copper plate 200mm tall by 300mm wide and 25mm thick when the surface temperature are 150°C. $K = 385\text{W/M}_2$ (4marks)

Question TWO

- i) Discuss the greenhouse effect in relation with human activities (6marks)
- ii) With examples, outline 3 indicators of climate change (3marks)
- iii) Describe the significance of the atmosphere to living things. (6marks)

Question THREE

- a) What do you understand by the following terms in relation with international agreements
- (i) Protocol (1mark)
 - (ii) Accord (1mark)
 - (iii) Convection (1mark)
- b) Write short notes on the following
- (i) Kyoto protocol (6marks)
 - (ii) UNFCCC (6marks)

Question FOUR

Discuss any THREE methods used in determining climate change (15marks)

Question FIVE

- i) Explain Hydrometeors **(2marks)**
- ii) Discuss FOUR ways that the community residing in Mombasa City can undertake to cope with climate variability **(8marks)**
- iii) Describe the convection clouds process **(5marks)**