



EMBU UNIVERSITY COLLEGE

(A CONSTITUENT COLLEGE OF THE UNIVERSITY OF NAIROBI)

TRIMESTER EXAMINATION 2013/2014

SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN  
WATER RESOURCES MANAGEMENT AND BACHELOR OF SCIENCE IN  
MANAGEMENT OF AGROECOSYSTEMS AND ENVIRONMENT

AEM 202: ATMOSPHERIC SCIENCE

DATE: AUGUST 5, 2014

TIME: 11.00AM – 1.00PM

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**INSTRUCTIONS:**

Answer Question ONE and ANY Other TWO Questions.

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**QUESTION ONE**

- a) Describe the following terms as used in atmospheric science.
- i.) Atmospheric thermodynamics (3 marks)
  - ii.) Thermal conduction (3 marks)
  - iii.) Super-saturation (3 marks)
  - iv.) Rayleigh scattering (3 marks)
- b) Outline the ideal gas law and explain its application. (6 marks)
- c) On the basis of physical structure, describe three basic categories of clouds. (6 marks)
- d) Explain two main basic methods you can use to undertake air quality sampling and analysis for an average busy Kenyan city. (6 marks)

**QUESTION TWO**

- a) With the aid of appropriate examples, discuss three optical properties of the earth's atmosphere. (10 marks)
- b) Explain the importance of geographic information systems (GIS) in weather forecasting in Kenya (10 marks)

**QUESTION THREE**

- a) Discuss how human activities contribute to weather modification. (10 marks)
- b) Using concepts of cloud physics outline the process of raindrop formation and precipitation. (10 marks)

**QUESTION FOUR**

- a) Outline and explain the three main modes of heat transfer in the atmosphere. (10 marks)
- b) Describe three main causes of weather systems in tropical climates. (10 marks)

**QUESTION FIVE**

- a) Describe three main layers of the atmosphere. (10 marks)
- b) Explain three main physical properties of the layers of the atmosphere. (10 marks)

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