



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2013/2014

**FIRST YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF SCIENCE IN EARTH SCIENCES WITH
INFORMATION TECHNOLOGY**

(MAIN CAMPUS)

NGA 105: ATMOSPHERIC SCIENCES

Date: 15th July 2014

Time: 8.30 - 10.30 a.m

INSTRUCTIONS:

- Answer Question ONE (1) and any other TWO (2) questions
- Illustrations should be used where appropriate



NGA 105: ATMOSPHERIC SCIENCES

1. a) Discuss the unique atmospheric conditions of each planet in the Solar System. (8 marks)
- b) Distinguish between the following:
 - i) Horizontal and vertical pressure distribution. (4 marks)
 - ii) Dry adiabatic and moist adiabatic lapse rates. (4 marks)
- c) Write short notes on the following:
 - i) Frontogenesis (5marks)
 - ii) Frontolysis (4marks)
 - iii) Bergeron process (5marks)
2. a) Discuss the forces affecting wind and how they are balanced in the atmosphere. (10 marks)
- b) Account for the annual distribution of solar radiation. (10 marks)
3. a) Discuss the growth and development of different weather stations in Kenya. (10 marks)
- b) Examine the influence of inter-tropical convergence zone and its associated air masses on East African climate. (10 marks)
4. a) Examine the relationship between temperature, thickness of the atmosphere, pressure and wind. (12 marks)
- b) Explain the thermal structure of a tropical cyclone. (8marks)
5. a) Discuss the spectrum of radiation and characteristics of emitted radiation. (10 marks)
- b) Explain the guidelines considered when forecasting movement of a front. (10marks)
6. a) Explain the seasonality concept and why seasons occur. (10 marks)
- b) Explore the factors that modify the structure and properties of an air mass. (10 marks)