



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF SPATIAL PLANNING**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN**  
**WATER RESOURCE AND ENVIRONMENTAL MANAGEMENT**  
**SEMESTER 2016/2017 ACADEMIC YEAR**

**CENTRE: MAIN CAMPUS**

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**COURSE CODE: PES 3122**

**COURSE TITLE: INTRODUCTION TO ATMOSPHERIC PROCESSES**

**EXAM VENUE:**

**STREAM: SPATIAL PLANNING**

**DATE:**

**EXAM SESSION:**

**TIME: 2 HOURS**

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**Instructions:**

- 1. Answer question 1 ( compulsory ) and ANY other 2 questions.**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

## QUESTION ONE

- a. Define the following terms in relation to climate change science.
- i. Climate (1 mark)
  - ii. Hydrosphere (1 mark)
  - iii. Atmosphere (1 mark)
  - iv. Hazard (1 mark)
  - v. Vulnerability (1 mark)
- b. Explain the role played by ozone in regulating the energy balance in the atmosphere and protecting life forms. (5 marks)
- c. Explain the **FOUR** factors that control the concentration of chemical species in the atmosphere. (10 marks)
- d. Discuss **FOUR** layers of the thermal stratification of the atmosphere. (10 marks)

## QUESTION TWO

- a. Discuss the **FOUR** fronts that may arise when two air masses meet at a point. (16 marks)
- b. State the **FOUR** classes of cloud classification. (4 marks)

## QUESTION THREE

- a. State the **TWO** causes of horizontal variation in air pressure over the globe. (2 marks)
- b. Describe **THREE** processes through which cooling occurs in the atmosphere (9 marks)
- c. Explain any **THREE** mechanisms through which heat is transferred in the atmosphere up to the surface of the earth. (9 Marks)

## QUESTION FOUR

- a. Differentiate between **Mitigation** and **Adaptation** as used in the study of Climate Change Science. (4 marks)
- b. Discuss **FIVE** effects of Climate change as projected by Intergovernmental Panel on Climate Change (IPCC). (10 marks)
- c. Discuss the **THREE** scales of meteorological study. (6 marks)

## QUESTION FIVE

a. Discuss the **THREE** main atmospheric waves that regulate themotion over the globe.

(12 marks)

b. Discuss **Thornwaite's** climate classification systems as adopted by climatologists

(8 marks)