



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

**CENTRE: MAIN CAMPUS**

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**COURSE CODE: PWE 3312**

**COURSE TITLE: CLIMATOLOGY AND GENERAL CIRCULATION**

**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. Differentiate the following terms as used in Climatology and General Circulation
  - i. Solar and Terrestrial radiation (2 Marks)
  - ii. Relative and Specific Humidity (2 Marks)
- b. Discuss **SIX** factors that affect the distribution of solar radiation over the globe. (12 Marks)
- c. Discuss any **FIVE** roles of water vapour to biotic environment. (10 Marks)
- d. Define fog and list any **THREE** types of fog. (4 Marks)

## QUESTION TWO

- a. Explain with reference to height the **THREE** classes of clouds as categorised by World Meteorological Organization (12 Marks)
- b. Discuss with reference to mode of formation and extent of influence on local weather Anabatic and Katabatic winds. (8 Marks)

## QUESTION THREE

- a. In the broad sense micro-climatology involves the study of the climate near the ground and discuss any **FIVE** key factors which affect microclimatology. (10 Marks)
- b. Define and hence classify air masses which predominantly affect different areas into **FIVE** major categories (10 Marks)

## QUESTION FOUR

- a. Discuss the role played by Intertropical Convergence Zone (ITCZ) in climate modification within the equatorial belt. (10 Marks)
- b. State and discuss any **THREE** types of fronts. (10 Marks)

## QUESTION FIVE

- a. Define Kinetic Energy and hence derive from the first principles Kinetic Energy in isobaric coordinates. (14 Marks)
- b. List any **SIX** factors that lead to modification of airmasses as they move away from source regions. (6 Marks)