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**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**

**COURSE CODE: PWE 3312**

**COURSE TITLE: CLIMATOLOGY AND GENERAL CIRCULATION**

**EXAM VENUE: STREAM: SPATIAL PLANNING**

**DATE: EXAM SESSION:**

**TIME: 2 HOURS**

**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**

1. Define the following terms as used in Climatology and General Circulation
2. Mixing Ratio (3 marks)
3. Dew Point TemperatureRelative Humidity (3 marks)
4. Explain the role played by albedo in regulating the energy balance in the atmosphere.

 (5 Marks)

1. Discuss any **FIVE** components of climate system. (10 Marks)
2. Explain any **THREE** sources of water vapour in the atmosphere. (9 Marks)

**QUESTION TWO**

1. Explain any **FOUR** factors that lead to maximum insolation within the low latituteds compared to extra tropics. (14 Marks)
2. Discuss with reference to mode of formation and extent of influence on local weather.
3. Katabatic and Anabatic winds (3 marks)
4. Monsoons (3 marks)

**QUESTION THREE**

1. Discuss the **FOUR** sources of energy within the atmosphere in the study of Climatology and General Circulation. (12 marks)
2. Discuss any **FOUR** factors that influences Evapotranspiration. (8 marks)

**QUESTION FOUR**

1. From the first principle, derive the equation for Total Potential Energy in isobaric coordinates. (15 marks)
2. Define Microclimatology and explain any **FOUR** factors that affect Microclimatology of a given region. (5 marks)

**QUESTION FIVE**

1. Define the term airmass and explain any **FOUR** types of airmasses (17 marks) b. Define any **THREE** types of **FRONTS** in the study of Climatology and General

 Circulation. (3 Marks)