



# **SOUTH EASTERN KENYA UNIVERSITY**

## **UNIVERSITY EXAMINATIONS 2017/2018**

### **FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN METEOROLOGY**

#### **SMR 310: AGROMETEOROLOGY I**

**DATE: 15<sup>TH</sup> DECEMBER, 2017**

**TIME: 1.30 -3.30 PM**

#### **INSTRUCTIONS TO CANDIDATES**

**(a) Answer ALL the Questions in Section A**

**(b) Answer ANY TWO Questions in Section B**

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#### **SECTION A: Answer ALL Questions in this Section**

**30 Marks**

##### **Question 1**

- a) Explain the meaning of the following terminologies (10 marks)
- i) Guttation
  - ii) Metadata
  - iii) Potential evaporation
  - iv) Regolith
  - v) Soil
- b) State beer's law, identify all the terms in the equation (5 marks)
- c) Explain 5 important factors to consider when selecting a site for an agrometeorological station (5 marks)
- d) Describe three properties of the following
- i) Top soil (3 marks)
  - ii) Sub soil (3 marks)
- e) Define what subsurface irrigation means and what effectiveness of water use is (4 marks)

#### **SECTION B: Answer only TWO Questions from this Section**

**40 Marks**

##### **Question 2**

- a) Discuss why it is important for agrometeorologists to study the following.
- i) Temperature (5 marks)
  - ii) Wind (5 marks)
  - iii) Pressure (5 marks)
  - iv) Humidity (5 marks)

### Question 3

- a) Clearly explain 5 roles agrometeorologists play in the agricultural industry (10 marks)
- b) What do you understand by the Spatial and Temporal scales in Agrometeorological studies (5 marks)
- c) Differentiate between phenological and phenometric observations (5 marks)

### Question 4

- a) Explain 5 reasons why you would recommend agro forestry to farmers (10 marks)
- b) What are sunflecks and what effect do they have in forests (5 marks)
- c) What is the difference between latent heat flux and sensible heat flux (5 marks)

### Question 5

- a) What is the function of organic matter in the soil (5 marks)
- b) Discuss two approaches for studying the soil (5 marks)
- c) Define the following parameters and explain why they are important to know in understanding the soil moisture conditions for crops?
  - i) Saturation (5 marks)
  - ii) Permanent wilting point (5 marks)