



UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER

PROGRAMMES: BSC AGRICULTURAL AND BIOSYSTEMS
ENGINEERING YEAR II

COURSE CODE: ABE 201

TITLE OF PAPER: AGRO- CLIMATOLOGY

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER QUESTIONS ONE AND ANY TWO OTHER
QUESTIONS.

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BY THE CHIEF INVIGILATOR.

AGRO – CLIMATOLOGY

Question 1: Compulsory

- (a) The figure below shows that the maximum air temperature does not coincide with the maximum solar radiation received by the earth. Give two reasons why this is so. [10 marks]

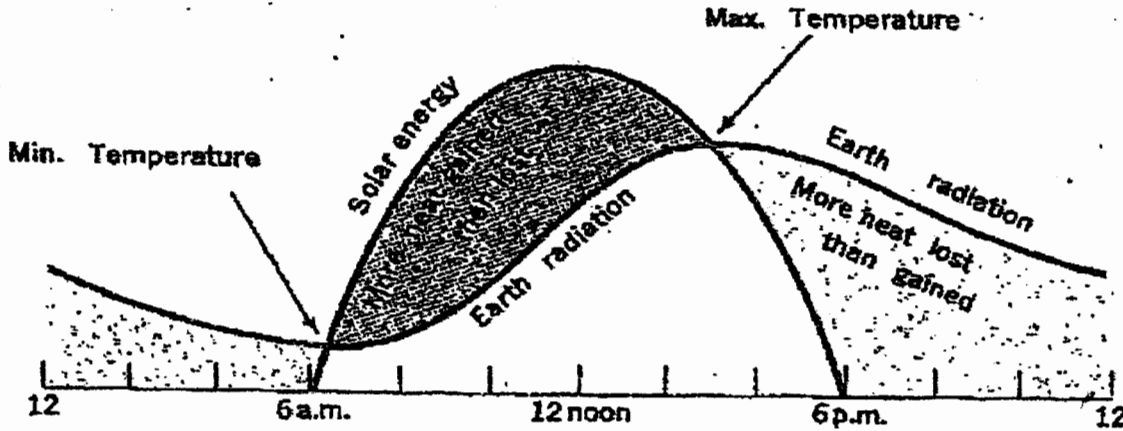


Figure 6: Daily temperature rhythm as influenced by solar and earth radiation

- (b) Briefly describe the difference between Potential Evapotranspiration and Actual Evapotranspiration as used in Agro – Climatology. [10 marks]
- (c) (i) Why is rainfall important in Agriculture [5 marks]
- (ii) Describe three factors that influence effective rainfall [15 marks]

Question 2

- (a) Discuss and describe four probable causes of climate change. [20 marks]
- (b) Describe one method of determining evapotranspiration. [10 marks]

Question 3

- (a) Give & discuss three weather factors and three plant factors that influence evapotranspiration. [15 marks]
- (b) Describe in full what is meant by effective rainfall and how it affects irrigation scheduling. [15 marks]

Question 4

(a) A two hectare field grown with maize crop is irrigated by sprinklers. The sprinkler system applies 4.00mm/hr water. And it irrigates 6 hours to fulfill the crop water requirements.

(i) Calculate the amount of water applied in the field assuming the whole field is irrigated at once. [15 marks]

(ii) If the available water holding capacity of the soil is 24mm, how long will take to apply or irrigate the field using the sprinkler specified above. [15 marks]