

UNIVERSITY OF FORT HARE

**ELEMENTARY IRRIGATION
AGC 221**

SUPPLEMENTARY EXAMINATIONS

JANUARY 2014

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Time: 3 Hours
Subject: AGC 221
Marks: 100

This paper consists of 3 pages including the cover page

Internal Examiners

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INSTRUCTIONS

Answer all FIVE questions

Question 1. Complete the sentences below (20 Marks).

- (i) _____ is the relative proportions of sand, silt and clay of soil
- (ii) Irrigation method that applies water in frequent, low volume and low pressure is called _____
- (iii) An underground layer of gravel, earth or porous rock which contains water is called _____
- (iv) Surface irrigation applies water _____
- (v) _____ refers to irrigated land that is flat and enclosed by a barrier to prevent runoff
- (vi) The water needed for both evaporation and transpiration is also called _____
- (vii) The term Water Holding Capacity means _____
- (viii) _____ is the measure of how fast the soil will take in water
- (ix) _____ supplies water to plants by diverting the water from a natural source to an artificial channel
- (x) Soil structure refers to _____

Question 2. (20 Marks).

List the problems that are caused by poor irrigation water quality

Question 3. (20 Marks).

Describe how poor drainage of agricultural land affects each of the following

- (a) Aeration
- (b) Soil temperature
- (c) Farm operations
- (d) Pests and diseases

Question 4. (20 Marks).

According to the Green-Ampt model, infiltration rate i_t , at time t is related to the final steady

state infiltration, i_c and cumulative infiltration, I . Thus $i_t = i_c + \frac{b}{I}$

Where b is a constant.

In a certain irrigated field the infiltration rate was 15 mm h^{-1} when 80 mm depth of irrigation water was applied. If the final steady state infiltration rate was 4 mm h^{-1} , calculate the depth of irrigation water when the infiltration rate was 8 mm h^{-1} .

Question 5. (20 Marks).

List five considerations for the selection of an irrigation method

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