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**University Examinations 2016/2017**

FOURTH YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN HORTCULTURE

**ASE 2421: IRRIGATION AND DRAINAGE**

**DATE: DECEMBER, 2016 TIME: 2 HOURS**

**INSTRUCTIONS: -** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Define the term irrigation (2 marks)
2. Describe four factors that influence the choice of an irrigation method (12 marks)
3. Calculate the moisture content of a soil sample collected from a vegetable garden, whose wet soil and sampling tube weighed 265.9 gm. When put in an oven at a temperature of 1050C for 24 hours the dry soil and sampling tube weighed 246.6 gm, weight of the tube is 95 gm. (4 marks)
4. Define land drainage (2 marks)
5. (i) Describe drainage ditches in relation to construction (5 marks)

(ii) List five causes of salt accumulation in irrigation water (5 marks)

**QUESTION TWO (20 MARKS)**

1. Design an irrigation canal using the following given data
2. Discharge of the canal=24m3/s
3. Permissible mean velocity=0.80m/sec
4. Bed slope=1 in 5000
5. Side slope=1:1
6. Chezy’s constant C=44 (12 marks)
7. Define the following terms used in the design of an irrigation canal
8. Coefficient of Rugosity (N) (2 marks)
9. Mean velocity (V) (2 marks)
10. Critical velocity (2 marks)
11. Regime channel (2 marks)

**QUESTION THREE (20 MARKS)**

1. Using diagrams, explain how infiltration rate test may be carried out in a Paddy Field (8 marks)
2. By use of diagrams describe
3. Basic infiltration rate (2 marks)
4. Accumulated infiltration (2 marks)
5. Define field capacity and briefly explain how it is obtained in the field. (5 marks)
6. Explain three factors that affect water requirements for crops. (3 marks)

**QUESTION FOUR (20 MARKS)**

1. List six steps followed in the design of land drainage system (6 marks)
2. Outline two benefits of irrigation (2 marks)
3. By use of a diagram, discuss sprinkler method of irrigation giving advantage over other methods. (8 marks)
4. Outline two methods of determining permanent wilting point of crops (4 marks)