123

UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER

PROGRAMME; BSc. AGRICULTURAL AND BIOSYSTEMS ENGINEERING YR 3

COURSE CODE: ABE305

TITLE OF PAPER: INTEGRATED LAND AND WATER MANAGEMENT

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO OTHER QUESTIONS

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QUESTION 1: COMPULSORY QUESTION

a) Using Husdon's equation, determine the kinetic energy (KE) of rainstorm with intensity of 50 mm/hr.   (10 marks)

b) Determine the time of concentration (T) for a catchment with maximum length of flow of 700 m and average stream gradient of 4 m/10 m   (10 marks)

c) Discuss the four essential characteristics that differentiate integrated resource management from other management approaches.   (20 marks)

Total = 40 marks

QUESTION 2

a) Discuss the three levels of intensity on land evaluation, highlighting the mapping scale used under each level. (15 marks)

b) Discuss five rural land uses, using examples to illustrate your answers. (15 marks)

Total = 30 marks

QUESTION 3

a) Discuss five questions that are answered by land evaluation. (15 marks)

b) Discuss five factors that are considered in land capability classification. (15 marks)

Total = 30 marks

QUESTION 4

a) Using examples, discuss the effect of slope steepness and slope length on the rate of erosion for given soil.   (15 marks)

b) Using the Rational method, determine the expected runoff from rainstorm with rainfall intensity of 40 mm/hr, catchment area of 500 ha, and runoff coefficient of 0.50.   (15 marks)

Total = 30 marks