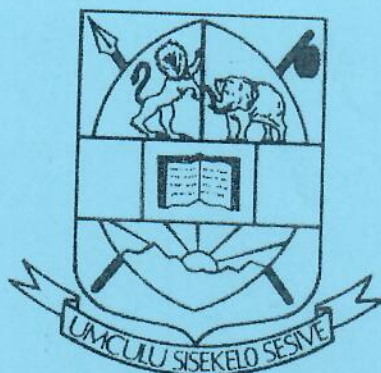


1st SEM.2017/18

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UNIVERSITY OF ESWATINI
FINAL EXAMINATION PAPER

PROGRAMME; BSc. AGRICULTURAL AND BIOSYSTEMS ENGINEERING
LEVEL 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

DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY THE
CHIEF INVIGILATOR

QUESTION 1: COMPULSORY QUESTION

- a) Determine the width of a grass strip that is desired for land with a slope of 5%.
(15 marks)

- b) Determine the value of a farm that is 50 ha on the basis of land capability classification. The land capability classes for the farm are as follows:

(15 marks)

Land Capability Class	Area	Unit price (E/ha)
I	6	75000
II	14	50000
III	0	30000
IV	10	15000
V	4	5000
VI	2	10000
VI	14	6000
Total	50	-

- c) Discuss five water resources for which it is essential to take an inventory in order to plan and conserve the resources.
(10 marks)

Total = 40 marks**QUESTION 2**

- a) Discuss the following levels of intensity as used in land evaluation, highlighting the appropriate mapping scale for each in this country.

i. Reconnaissance level

(10 marks)

ii. Semi-detailed level

(10 marks)

- b) Discuss five land resources attributes for which inventory is necessary in order to make decision on land use.

(10 marks)

Total = 30 marks

QUESTION 3

- a) Determine the desired vertical in height (VI) for a channel terrace for land with slope of 15% using the South Africa equation. Make your own appropriate assumptions for the other parameters required, and state your assumptions. (15 marks)
- b) Discuss five crop management strategies that can be used as soil conservation strategies. (15 marks)

Total = 30 marks**QUESTION 4**

- a) Using the Rational method, determine the expected runoff from rainstorm with rainfall intensity of 50 mm/hr, catchment area of 500 ha, and runoff coefficient of 0.60. (15 marks)
- b) Discuss five factors that are considered in land capability classification. (15 marks)

Total = 30 marks