



**UNIVERSITY OF SWAZILAND
SUPPLEMENTARY EXAMINATION PAPER**

**PROGRAMME: DIPLOMA IN AGRICULTURE 3
DIPLOMA IN AGRICULTURAL EDUCATION 3**

COURSE CODE: LUM 302

TITLE OF PAPER: SOIL AND WATER CONSERVATION

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

**INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO
OTHER QUESTIONS.**

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SECTION A COMPULSORY QUESTION

QUESTION 1

- a. Crop management is also used as a soil conservation technique. Describe the different methods used in this technique. 30 marks
- b. Discuss in detail the agricultural importance of historic rainfall data. 10 marks

SECTION B. ANSWER ANY TWO QUESTIONS

QUESTION 2

Describe the following concepts as used in soil and water conservation.

- i. Terraces
- ii. Water harvesting
- iii. Runoff

30 marks

QUESTION 3

- a. Describe the effect of the following in the rate of water erosion.
- i. Rain drop
 - ii. Contour strips
 - iii. Length of slope
- 15 marks
- b. Using the Zimbabwe method, determine the recommended spacing between terraces constructed on highly erodible soils with an average slope of 12%. Express your answer in metres. 15 marks

QUESTION 4

- a. Determine the time of concentration for a catchment area with maximum length of 2 km and difference in height of 25m from the upper point to the lower point of the catchment.

$$T_c = 0.0195 L^{0.77} S^{-0.385}$$

15 marks

- b. Using sketches for illustration, describe the homogeneous and zoned embankments, stating their advantages.

15 marks