



**UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER**

PROGRAMME: DIPLOMA IN AGRICULTURE AND DIPLOMA IN
AGRICULTURE EDUCATION YEAR 3

COURSE CODE: LUM 305 (Old Programme)

TITLE OF PAPER: LAND USE PLANNING

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 One**

- a. Use examples to illustrate the differences between reconnaissance survey, semi-detailed survey as used in land use planning. (20 marks)
- b. Give land capability classes and subclasses where appropriate to parcels of land with the following characteristics and indicate the most intensive type of land use selected, indicating any soil conservation measures necessary to control soil erosion under the land use. 20 marks

Land characteristics	Land A	Land B	Land C	Land D	Land E
Soil depth (cm)	120	17	95	55	60
Slope (%)	17	1	37	7	4
Wetness problem	W ₁	W ₀	W ₂	W ₃	W ₂
Past erosion	Severe	Slight	Bad	Severe	Slight
Permeability of soil	Slight	Good	Bad	Worse	Bad

Land characteristics	Limits							
	≤2	4	7	14	Any	29	35	>39
Slope (%)	≤2	4	7	14	Any	29	35	>39
Effective soil depth (cm)	>90	>50	>50	>25	Any	Any	Any	Any
Wetness problem	W ₀	W ₀	W ₁	W ₂	W ₃	W ₂	W ₂	W ₂
Permeability of soil	Good	Good	Fair	Poor	Any	Worse	Worse	Worse
Past erosion problems	None	None	Slight	Slight	Any	Bad	Worse	Worse
Land capability class	I	II	III	IV	V	VI	VII	VIII

SECTION B. ANSWER ANY TWO QUESTIONS**Question Two**

- a. Using realistic examples illustrate how you can use soil depth, slope and wetness problems to evaluate for suitability of maize production for three land parcels in a farm. (15 marks)
- b. Describe the components of the energy interaction equation and highlight how the spectral reflectance is derived and used to discriminate landscape features. (15 marks)

Question Three

- a. Describe any two examples of land characteristics considered to be permanent limitations and two considered to be temporal limitations during land capability classification. (20 marks)
- b. Calculate the scale of an aerial photograph which was taken from an air craft flying at an altitude of 2.5 km, using a camera with focal length of 152 mm. (10 marks)

Question Four

- a. Explain in detail the common type of data collected when undertaking field survey for the land resources for the purpose of land use planning, highlighting how the data can be obtained. (10 marks)
- b. Explain the meaning of the following terms:
 - i. Land Productivity Index (10 marks)
 - ii. Field survey (10 marks)