

AGEN 551

EGERTON



UNIVERSITY

UNIVERSITY EXAMINATIONS
NJORO CAMPUS

FIRST SEMESTER 2012/2013

FIFTH YEAR EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN
AGRICULTURAL ENGINEERING
AGEN 551: LAND USE PLANNING

STREAM: 2008 (Y5) B. SC. AGEN

TIME: 2 hours

DAY/TIME: FRIDAY, 03.00 – 05.00 pm

DATE: 18/01/2013

INSTRUCTIONS:

1. The paper contains **FIVE (5)** questions
2. Attempt **any FOUR (4)**.
3. All questions carry equal marks.
4. Marks for each question are shown in parenthesis.
5. Use clear and well labelled diagrams/illustrations where necessary.
6. **EACH QUESTION SHOULD BE STARTED ON A NEW PAGE.**

QUESTION ONE

(a) Explain the following terms as used in Air Photo-Interpretation.

- (i) Principal points (1½ marks)
- (ii) Nadir point (1½ marks)
- (iii) Isocenter (1½ marks)

(b) Two cameras equipped with a 152.4-mm and a 305-mm focal lengths were mounted on an aircraft to take photographs from 3000 m above the ground as shown in **Figure Q1**.

- (i) What will be the scale of the photographs taken with the two different focal lengths? (10½ marks)
- (ii) If the format of the photographs is 23 by 23 cm, how much area will be covered by the photograph (Photo 1) taken with the 152.4 mm and by the photograph (Photo 2) taken with the 305 mm focal length? (10 marks)

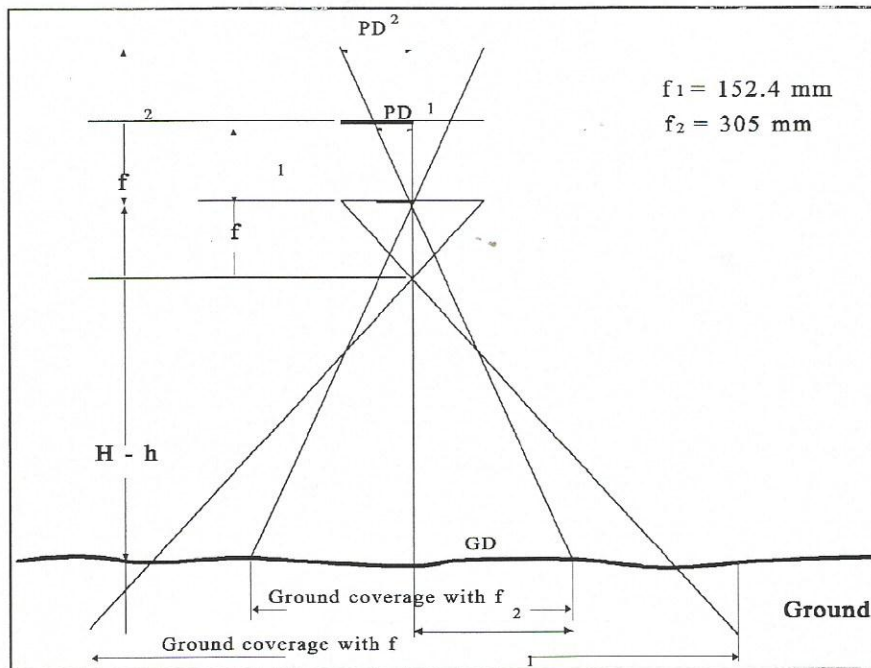


Figure Q1: Focal length for Photo 1 and Photo 2

QUESTION TWO

- (a) Explain the difference between Land use and Land cover (10 marks)
- (b) What is a Land Unit? (10 marks)
- (c) What are the requirements for land use planning? (5 marks)

QUESTION THREE

- (a) What is Land Capability Classification? (2 marks)
- (b) State **any four (4)** land capability classification methods (4 marks)
- (c) Explain with examples the arable classes within land capability classification methods (19 marks)

QUESTION FOUR

- (a) What is "Scattering" and how does it occur? (5 marks)
- (b) How would Electromagnetic Radiation detect non-growing or dead vegetation (such as crops in senescence)? Using the spectral characteristics of vegetation, identify the points that depict maximum green pigment reflection and maximum water absorption rate. (20 marks)

QUESTION FIVE

- (a) Explain the following terms as used in Remote Sensing:
- (i) Supervised classification (5 marks)
 - (ii) Atmospheric windows (5 marks)
- (b) What is Geographical Information System, GIS? Explain with examples its major components. (10 marks)
- (c) (i) What is Map Projection, as used in GIS? (1 mark)
- (ii) State at least four (4) Map Projection types used in GIS (4 marks)
