AFRICA UNIVERSITY

(A United Methodist-Related Institution)

INVESTING IN AFRICA'S FUTURE

FACULTY OF EDUCATION

END OF SEMESTER EXAMINATION QUESTION PAPER

COURSE CODE	**ACP 203**
COURSE TITLE	**PRINCIPLES OF CROP PRODUCTION**
PROGRAM	**B. Ed, B. A. Ed (Block release)**
EXAMINER	**MR. J. TABARIRA**
DATE	**APRIL, 2014**
DURATION	**3 HOURS**
INSTRUCTIONS	**1.ANSWER QUESTION 1 AND THREE OTHERS** **2. ALL QUESTIONS CARRY EQUAL MARKS**

1. The Ministry of Agriculture has adopted conservation farming as a technology that can improve crop productivity and livelihoods among Zimbabwean farmers.

i) State four main principles of conservation farming and clearly explain how each principle contributes to

the success of the technology. **[12]**

b. You have been recommended to apply 450kg Comp. D per hectare for your maize crop. The plant spacing advised by the Agronomist is 90 cm inter row by 25 cm intra row.

Calculate the following:

i) Amount of fertilizer to broadcast per m^2. **[1]**

ii) Amount of fertilizer to drill along a 25 m row. **[2]**

iii) Amount of fertilizer to apply per planting station. **[2]**

c. Give explanatory notes on how each of the following factors affects herbicide effectiveness.

i) Temperature **[1]**
ii) Pubescence **[1]**
iii) Leaf shape and orientation **[1]**

2(a). Define land equivalent ration (LER) **[2]**

(b). A farmer intercropped sesame with cowpeas and got the yields as tabulated below:

Table 1: Yield of sesame intercropped with cowpeas

Crops	Yield (kg/ha)	LERs	Total LER	Intercrop benefit
Sole cowpeas	3900 (S_A)			
Sole sesame	1760 (S_B)			
Intercrop cowpeas	3855 (Y_A)	**(i)**		
Intercrop sesame	955 (Y_B)	**(ii)**	**(iii)**	**(iv)**

Calculate missing values (i to iv) and comment on the benefit of this intercrop system. **[10]**

(c) State and briefly explain four factors influencing the choice of a harvesting method. **[8]**

3a. A maize seed lot has a germination percentage of 90%. Field losses before harvesting are estimated at 5%. Seed size of the cultivar is medium round giving 2000 seeds / kg.

You have been instructed to plant one hectare using this seed lot at plant spacing of 75 cm by 30 cm.

Calculate:

(i) Amount seed required at planting to achieve the target plant population at harvesting. **[5]**
(ii) Amount of seed to plant in a 100 m row. **[2]**
(iii) Total seed weight at planting to achieve the target plant population at harvesting **[3]**

3b. Define the following terms:

(i) Tillage (ii) Sequential cropping

(iii) Crop rotation (iv) integrated weed control

(v) Double cropping **[5]**

3c. State five factors that influence the choice of plant spacing **[5]**

4. During sprayer calibration a farmer obtained the following information:

(i) Walking speed per 100 m = 75 seconds
(ii) Nozzle discharge rate = 1.3 liters / minute
(iii) Swath width = 80 cm
(iv) Spayer capacity = 16 litres
(v) Chemical application rate = 5 litres / hectare

Calculate:

(a) Walking speed in kilometers per hour **[3]**
(b) The spray volume **[3]**
(c) Amount of chemical per knapsack sprayer **[3]**
(d) The area covered by each knapsack sprayer **[3]**

4(f). Discuss the disadvantages of intercropping **[8]**

5(a). State and explain four advantages of crop rotation **[12]**

5(b). Discuss in detail mechanical weed control method. **[8]**

END OF EXAMINATION