# WOMEN'S UNIVERSITY IN AFRICA

*Addressing gender disparity and fostering equity in University Education*

**FACULTY OF AGRICULTURAL SCIENCES**

**BSc AGRICULTURE HONOURS DEGREE IN HORTICULTURE**

AH212 SEED SCIENCE AND TECHNOLOGY

DECEMBER 2020 MAIN PAPER

**Time:** 3.00Hrs **Date:**

**Instructions to candidates**

Answer any four questions

**Question one**

(a) Using examples, examine the following terms:

(i) Seed from a sexual reproduction perspective; (5)

(ii) Germplasm from a plant propagation perspective. (5)

(b) Distinguish:

(i)Gynoecium from androecium*;* and (5)

(ii) Gamete from seed embryo. (5)

(c) 'Self-sterility in plants promotesseed hybridisation in crop production.'Explain. (5)

**Question two**

(a) Examine how seed dormancybenefits farmers by ensuring survival of seeds when environmental conditions are unfavourable. (10)

(b) Explain how farmers break seed dormancy using the following methods:

(i) Stratification; (5)

(ii) Scarification; and (5)

(iii) Leaching. (5)

**Question three**

(a) Explain how the following seed quality tests in seed production protect the farmer:

(i) Germination tests; (5)

(ii) Cold test; (5)

(b) Using examples, explain why the following seed purity tests help farmers more than the seed regulatory authorities:

(i) Percent of other crop seed (5)

(ii) Percent weed seed (5)

(c) Explore the causes of mechanical seed damage in seed production and processing highlighting how this affects seed viability. (5)

**Question four**

(a) Examine rogues and off-types in seed production. (10)

(b) A sample of 900g of soybean seed drawn from a seed lot contained 15g sugar bean seed, 13g wheat seed and 125g maize seed.

(i) State the formula used to calculate percent other crop seed in the sample; (5)

(ii) Determine percent of other crop seed in the sample; (5)

(iii) Explore the various consequences to the farmer caused by the presence of other crop seed in seed packages. (5)

**Question five**

Using the Seedco seed variety SC301 as an example, explain the following:

(a) Distinctiveness of specified characters; [10]

(b) Phenotypic uniformity of characters; and [10]

(c) Stability on yield, disease and pest tolerance. [5]

**Question six**

(a) Examine why breeders prefer using inbred lines as parents in breeding programmes. (5)

(b) Explain how each of the following types of hybrids are produced highlighting their importance to farmers in the seed industry:

(i) Single Cross Hybrid; (5)

(ii) Three Way Hybrid; (5)

(iii) Double Cross Hybrid; and (5)

(iv) Top Cross. (5)

**END**