

# Uganda Martyrs University

## Faculty of Agriculture

Final Examination 2017-2018  
Bachelors of Science in Agriculture Year Three  
Bachelors of Science in Organic Agriculture Year Three

### Module: AG 9& AG 11: Commodity Improvement and Biotechnology Examination 2018

Time: 09:30 am – 12:30 pm    Date: Thursday 12<sup>th</sup> July 2018

**Instructions:**

- Attempt any *FOUR* questions.
  - All questions carry equal 25 marks.
  - Do not write anything on the question paper
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|------|---|----------|
| 1 a) | Explain the different types of intellectual property rights in plant breeding   | 15 marks |
| b)   | Describe the factors favoring allogamy in plants  | 10 marks |
| 2 a) | Discuss the procedure of Multiple Ovulation Embryo Transfer   | 10 marks |
| b)   | Outline the merits and demerits of Multiple Ovulation Embryo Transfer   | 15 marks |
| 3    | Contrast the following terminologies as used in plant breeding  |          |
| a)   | Hybrid breeding vs Mutation breeding  | 05 marks |
| b)   | Hardy-Weinberg Equation vs Mendel's Law of Independent Assortment   | 10 marks |
| c)   | Seed priming vs Seed Pelleting  | 05 marks |
| d)   | On-station trials vs Multi-location trials  | 05 marks |
| 4    | Citing specific names of twelve improved crop varieties released by different research institutes, list the particular biotic/abiotic constraint each is resistant/tolerant to. | 25 marks |
| 5 a) | Explain the characteristics of wind pollinated flowers  | 10 marks |
| b)   | Discuss the violations of the Hardy-Weinberg Equation   | 15 marks |

- 6 a) Using a suitable illustration, discuss the procedure for backcross breeding in plants 15 marks
- b) Describe the merits and limitations of seed banks in germplasm conservation 10 marks
- 7 a) Explain the sources of variation in a pure-line 10 marks
- b) Discuss the different activities carried out in ex-situ conservation to ensure germplasm are maintained viable for decades 15 marks
- 8 Define the following terminologies
- a) Obsolete cultivars 02 marks
  - b) Micro-centres 02 marks
  - c) Landraces 02 marks
  - d) Quantitative traits 02 marks
  - e) Mutagen 02 marks
  - f) Mutation 02 marks
  - g) Genetic erosion 02 marks
  - h) Mendel's Law of segregation 03 marks
  - i) Centre of origin 02 marks
  - j) Centre of diversity 02 marks
  - k) Qualitative trait 02 marks
  - l) Inbreeding depression 02 marks