



**SECTION A [30 MARKS]**

**Answer ALL questions from this Section**

1. Define or Explain the following terminologies

- (a) Plant breeding [1 MARK]
- (b) Cultivar [1 MARK]
- (c) Foundation seed [1 MARK]
- (d) Center of diversity [1 MARK]
- (e) Genotype [1 MARK]
- (f) Gene pyramiding [1 MARK]
- (g) Locus [1 MARK]
- (h) Mass selection [1 MARK]
- (i) Breeder seed [1 MARK]
- (j) Hybrid cultivars [1 MARK]

2. There are several techniques for broadening genetic base. DESCRIBE TWO of them

[5 MARKS]

3. A plant breeder will have knowledge in many subjects. List TEN of those subjects: [5 MARKS]

4. Describe FIVE mechanisms of outcrossing [5 MARKS]

5. Describe FIVE methods of propagation used in clonal crop production. [5 MARKS]

**SECTION B (40 MARKS)**

**Answer ANY TWO questions in this section**

6a. Different crop species originated in different regions of the world. List the centers of origin of the following ten crop species: beans (*Phaseolus* spp), maize (*Zea mays*), rice (*Oryza sativa*), potato (*Solanum tuberosum*), soybean (*Glycine max*), sorghum (*Sorghum bicolor*), oil palm

(*Elaeisguineensis*), sunflower (*Helianthus* spp.), wheat (*Triticum* spp.), and barley (*Hordeum vulgare*). **[10 MARKS]**

6b. Explain, using examples as necessary, the meaning of the terms plant tolerance and plant escape in relation to pest and disease resistance and plant breeding. **[10 MARKS]**

7. You were given a bag of seeds of a cereal crop you have never heard of before. Describe what you would do with the seeds and what information you would collect that would allow you to develop new cultivars from these seeds. **[20 MARKS]**

8. Describe TEN social concerns and consequences of biotechnology in agriculture.

**[20 MARKS]**