

Uva-Wellasa University, Sri Lanka.

Btech. Science and Technology

End semester Examination – Semester 1

December 2008

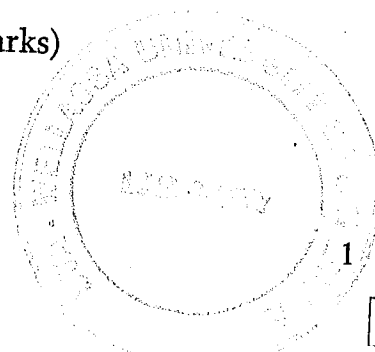
BIO-312-2 - Breeding & Genetics

Answer four (04) questions

Time: Two (02) hours

1. a. What is a Land Race? (03 marks)
 - b. Explain why land raises are valued high in plant breeding. (07 marks)
 - c. Describe an easy method of developing a superior variety using a land race (mode of reproduction is self-pollination) giving all the important steps involved (use a schematic diagram to illustrate your answer). (15 marks)
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2. Write short notes on three (03) of the followings:
 - a. Hybrid vigour (or heterosis)
 - b. Inbreeding depression
 - c. Synthetic and composite varieties
 - d. Linkage and Linkage drag

(25 marks)



3. a. Describe the steps in a backcross breeding method to incorporate a single dominant gene into an elite crop variety. (15 marks)
- b. What are the merits and demerits of backcross method? (05 marks)
- c. In a backcross breeding program to incorporate a resistant gene to an elite variety, the donor parent was crossed to the recurrent parent. Calculate using defined equations how many backcross generations are needed to recover approximately 99% of the recurrent parent's genome. (05 marks)
4. a. What are polyploids? (03 marks)
- b. Describe main types of natural polyploids and how they are formed. (07 marks)
- c. Explain how polyploidy is induced artificially. (05 marks)
- d. Why polyploids are important in plant breeding? (10 marks)
5. Write a detailed account on 'Mutation Breeding'. (25 marks)