

*The Federation of Irish Beekeepers' Associations*  
(Comhnascadh Cumann Beachairí na hÉireann)



Education and Examination Board

**GORMANSTON SENIOR SCIENTIFIC EXAMINATION 2017**

**Date:** Tuesday, 1<sup>st</sup>. August 2017.

Three hours (09.30-12.30)

**You must answer QUESTION 1 and FOUR OTHER QUESTIONS**

Draw diagrams and sketches where appropriate.

Write clearly and adhere strictly to the subject matter of the questions.

1. Give a detailed account of AFB and EFB under the usual headings for disease. (20 marks)
2. (a) Describe the process of pollination of a named flower by honeybees and the subsequent fertilisation. (12 marks)  
(b) The incidence of Chalkbrood is increasing. What is it, what are the signs, how is it detected, why is it increasing and what can be done? (8 marks)
3. (a) Give a statement of Mendel's Laws in relation to genetics. Explain the significance of 'population' in beekeeping. (6 marks)  
(b) Assume that bees have just two eye colours, yellow denoted by Y and brown denoted by y. If 30% of the drones that mate with a heterozygous yellow eyed queen are brown eyed drones determine the percent of each genotype and phenotype of their offspring. (14 marks)
4. Write notes on five of the following seven items:  
Acetic acid; queen substance; pollination indicators; proventriculus; supersedure cells; invertase; waggle dance, neonicotinoids. (5 x 4 marks)
5. (a) Use a well-labelled diagram to describe in detail the reproductive system of a honeybee queen. (8 marks)  
(b) Give an outline account of egg production. (8 marks)  
(c) Outline the advantages/disadvantages of polyandry. (4 marks)
6. Answer any two of the following.  
(a) Illustrate and describe the reproductive system of the drone. (10 marks)  
(b) Illustrate and describe the structure of the honeybee egg. (10 marks)  
(c) Describe invagination of the cuticle within the body of the bee (10 marks)