

**LEAVING CERTIFICATE EXAMINATION, 1998.**

**Agricultural Science - Ordinary Level**

**Wednesday 17 June - Afternoon 2.00 to 4.30**

**2902**

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**Six questions to be answered.**

**Question 1. Answer any six of the following:**

- (a) Name one perennial plant of agricultural importance.
- (b) Draw a simple diagram of a grass plant and show the location of each of the following: Ligule, Leaf Sheath, Tillers.
- (c) Mention two bodily characteristics desirable in beef animals.
- (d) Mention three advantages of adding lime to a soil.
- (e) Explain why a calf is unable to digest concentrate ration at a very early age.
- (f) Mention two practices which help to maintain the quality of milk after milking.
- (g) Name two breeds of sheep suitable for Mountain sheep production and two breeds of sheep suitable for Lowland sheep production.
- (h) Mention two advantages of crop rotation.
- (i) Give one example of the biological control of a named farm pest.
- (j) Show, with the aid of a simple diagram, the location of each of the following in a plant cell: Cell membrane, cytoplasm and the nucleus.

**(60 marks)**

**Question 2.**

- (a) Describe any two named soil profiles with which you are familiar.
- (b) Explain how you would determine the percentage of inorganic matter in a sample of soil from any one of the soil horizons in a profile.
- (c) Explain why good soil aeration is necessary for healthy plant growth.

**(48 marks)**

**Question 3.**

- (a) Describe in simple terms how carbohydrates are formed during photosynthesis.
- (b) Carbohydrates contain carbon, hydrogen and a third element which is re-cycled in nature. Explain, naming the third element, how it is re-cycled in nature.
- (c) Describe the importance of carbohydrates in the diet of farm animals.

**(48 marks)**

**OR**

**Question 3**

- (a) Describe a method you used in the laboratory to conserve grass as silage.
- (b) Explain why the stage at which grass is cut for the production of silage is so important.
- (c) Mention the factors which contribute to good root formation and plant development following the establishment of a cereal crop.

**(48 marks)**

**Question 4.**

- (a) Mention the principal factors which influence the spread of potato blight.
- (b) Describe the production of a named cereal or root crop under each of the following headings:
  - (i) Choice of variety
  - (ii) Pre and post seeding cultivation.
- (c) In the case of a grass sward, with which you are familiar, mention the principal factors which influence each of the following:
  - (i) Growth rate
  - (ii) Feeding value.

**(48 marks)**

**Question 5.**

- (a) Describe a suitable feeding programme for bonhams or lambs during the period from birth to weaning stage.
- (b) Mention two nutrient elements suitable for inclusion in foodstuffs and state how they are important in the body of farm animals.
- (c) Describe how nitrogen is re-cycled in nature.

**(48 marks)**

**Question 6.**

- (a) Describe the principal factors which influence the nutrient requirements of a dairy or beef herd.
- (b) Mention the principal management practices responsible for the production of a high yield of milk in a dairy enterprise.
- (c) Describe how the diet of an in-calf heifer alters after calving.

**(48 marks)**

**Question 7.**

- (a) Briefly explain why the pea plant is suitable for studies in genetics.
- (b) If a pea plant, heterozygous for round, is crossed with each of the following groups of plants:
  - Group A ..... Wrinkled (rr)
  - Group B ..... Round (RR)
  - Group C ..... Round (Rr)Write down the genotype and phenotype of the expected progeny from each of the three crosses.
- (c) Explain how a heterozygous organism may arise in plant or animal breeding.

**(48 marks)**

**Question 8. Answer any two of the following:**

- (a) Describe the principal factors which influence the length of the productive cycle of the cow or a sow.
- (b) Explain the importance of providing optimum housing conditions for the over-wintering of farm animals.
- (c) Mention the advantages and disadvantages of growing and storing cereals for home farm usage.

**(48 marks)**

**Question 9. Give a scientific explanation for any four of the following:**

- (a) A slow rate of decomposition of organic matter in a peaty soil.
- (b) The movement of water from the soil into a root hair.
- (c) Rotting of ensiled grass material close to the edge of the silage pit.
- (d) The production of carbon dioxide in the animal body.
- (e) Tillering in a cereal crop.

**(48 marks)**