

AN ROINN OIDEACHAIS

LEAVING CERTIFICATE EXAMINATION, 1982

BIOLOGY—ORDINARY LEVEL

WEDNESDAY, 16 JUNE—MORNING, 9.30 to 12.30

Answer six questions from Part I and four questions from Part II.

You should not spend more than 45 minutes on Part I, leaving about 135 minutes for Part II.

PART I (120 marks)

Answer six questions. Each question carries 20 marks.

Write your answers in the spaces provided.

Keep your answers short.

Write your examination number at top.

Be sure to return this part of the examination paper; enclose it in the answer-book you use for answering Part II.

1. Answer four of the following.

(a) Name the type of tooth which lies between the canines.

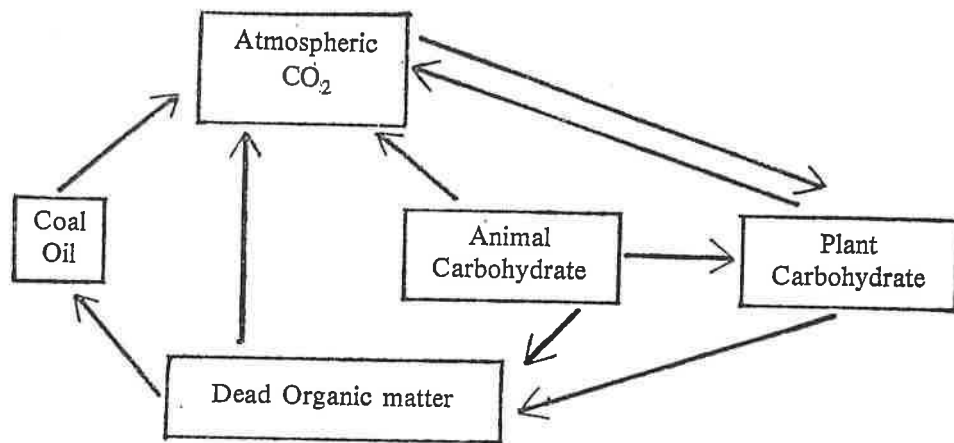
(b) Give an example of a stem modified for vegetative propagation.

(c) Bile is produced in the

(d) For what purpose are antibiotics used in medicine?

(e) The artery leaves the right ventricle of the heart and carries blood to the

2. (i) The diagram represents the carbon cycle in nature.



Let the letter X represent respiration, Y represent combustion and Z represent photosynthesis. Place the letters X, Y and Z on the correct arrows on the diagram.

(ii) Name a carbohydrate and describe a laboratory test to show its presence in a sample of food.

Name

Test

3. Answer each of the following by placing the correct answer (a), (b), (c) or (d) in the space provided.

- (i) A plant adapted to growing in very hot and dry climates is known as a
 - (a) hydrophyte
 - (b) xerophyte
 - (c) mesophyte
 - (d) halophyte

Answer.....

- (ii) Which of the following is the cell organelle responsible for giving leaves their green colour?
 - (a) vacuole
 - (b) ribosome
 - (c) chloroplast
 - (d) chromosome

Answer.....

- (iii) Which of the following is sensitive to light?
 - (a) lens
 - (b) retina
 - (c) iris
 - (d) cornea

Answer.....

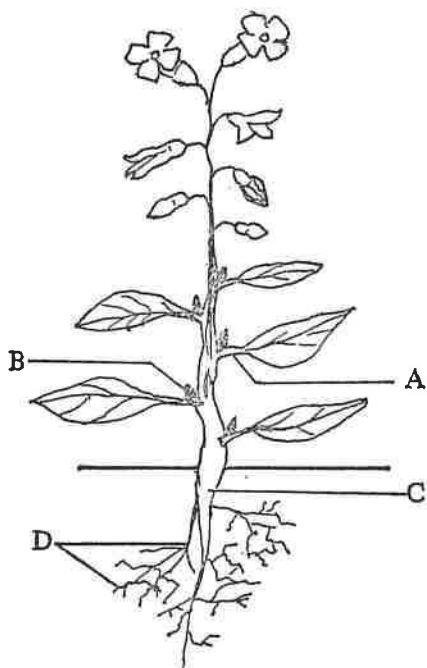
- (iv) Red blood corpuscles (erythrocytes) are formed in
 - (a) muscles
 - (b) bone marrow
 - (c) liver
 - (d) pancreas

Answer.....

- (v) Which of the following vitamins is made in man's skin in sunlight?
 - (a) Vitamin A
 - (b) Vitamin B
 - (c) Vitamin C
 - (d) Vitamin D

Answer.....

4. Name the parts labelled on the diagram of a flowering plant.



- A
- B
- C
- D

(i) The arrangement of leaves on the stem of the above plant may be described as

- opposite
- alternate
- spiral

(ii) Which part of the flower forms the fruit?

(iii) Give a function of the fruit?

5. (a) Give a function of each of the following parts of the mammalian ear.

Eustachian tube

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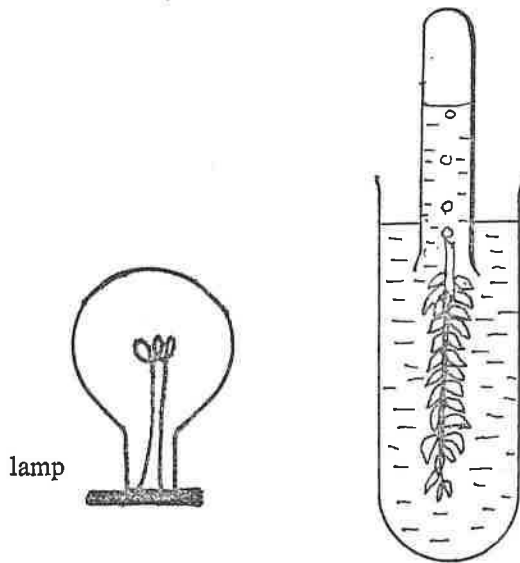
cochlea

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(b) Complete the following table:

Type of joint	Where found in the body	Bones involved
(i) ball and socket	scapula, humerus
(ii)	knee
(iii)	skull	bones of the cranium

6. When a cut piece of *Elodea* (pond weed) was placed in a test-tube of water and illuminated, bubbles of gas were seen to come from the plant, as shown in the diagram.



(i) Name the biological process being investigated in this experiment.

(ii) Name the gas being released

Outline a test to identify the gas

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(iii) Suggest a way to stop the bubbling without causing damage to the plant.

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(iv) How would you adapt the experiment shown to test the effect of temperature on the rate of gas production in *Elodea*?

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7. Give one difference between the members of each of the following pairs of terms.

(a) artery and vein

(b) gametophyte and sporophyte

(c) aerobic and anaerobic bacteria

(d) xylem and phloem

(e) phototropism and geotropism

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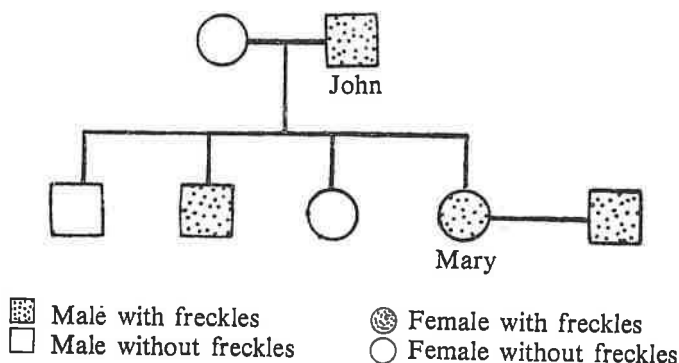
Part I is on a separate sheet which provides spaces for your answers. The completed sheet should be enclosed in your answer-book.

PART II (280 marks)

Write your answers to this part in your answer-book.

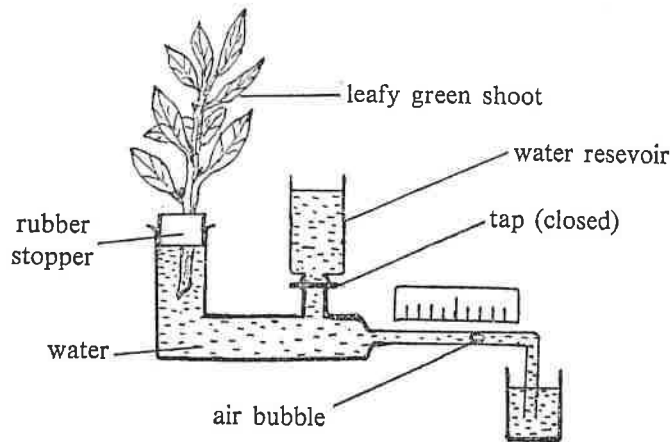
Answer four questions. Each question carries 70 marks.

8. (i) Draw a large labelled diagram to show the structure of *Rhizopus* (bread mould) as seen under the light microscope.
 (ii) Describe how a sample of *Rhizopus* may be obtained.
 (iii) Compare *Rhizopus* and *Spirogyra* under the headings (i) natural habitat, (ii) method of nutrition, (iii) asexual reproduction.
9. (i) What is meant by cellular respiration? Distinguish between aerobic and anaerobic respiration. Describe an experiment to show the production of carbon dioxide during respiration.
 (ii) Describe the role played by the diaphragm and intercostal muscles in breathing.
10. (a) What are multiple alleles?
 In man there are four main blood groups, A, B, AB and O. Write down the possible genotypes for each blood group. Which blood group is known as the universal donor?
 (b) Freckles on the skin is an inherited characteristic in humans. The allele for freckles (F) is dominant over the allele for absence of freckles (f). The diagram represents part of a family tree showing the inheritance of freckles.



- (i) Give the possible genotypes of John, John's wife.
 (ii) Mary marries a man homozygous for freckled skin. Show the possible genotypes and phenotypes of their children.
11. (a) Give the meaning of the following in relation to human reproduction:
 (i) copulation, (ii) fertilisation, (iii) implantation.
 (b) What is meant by immunity? Give one example of natural immunity and one example of acquired immunity.
 Why is it that new-born babies do not catch normal childhood diseases in the first few weeks of life?

12. The diagram shows the apparatus used in an experiment on transpiration.



Examine the diagram and answer the following:

- (a) Name the apparatus shown.
 - (b) What is the apparatus measuring?
 - (c) State, giving a reason, the precaution you would take when cutting the leafy shoot and inserting it in the apparatus.
 - (d) Which way will the air-bubble move when the apparatus is working?
 - (e) In each of the following cases state, *with reasons*, whether the rate of movement of the air-bubble will increase, decrease or remain the same:
 - (i) a fan is used to blow air across the shoot.
 - (ii) petroleum jelly is smeared on the *upper* surface of all the leaves and air then blown across the shoot.
 - (iii) petroleum jelly is smeared on the *lower* surface of all the leaves and air then blown across the shoot.
 - (f) What change(s) would you make in the apparatus shown to carry out a control experiment?
13. (a) (i) State *two* differences between mitosis and meiosis (a detailed description of each process is not required).
- (ii) Name and give the function of *two* structures common to plant and animal cells.
Draw a large labelled diagram of each of the following cell types: (i) a red blood corpuscle, (ii) a root hair cell. Outline the function of each cell.
- (b) Describe an experiment to find the humus content of a sample of soil.
14. (a) Define (i) ecology, (ii) pollution, (iii) conservation.
- (b) Name a habitat you have studied. Give an example of competition in the habitat. Name *four* methods (or pieces of equipment) you used to collect and sample the plants and animals in the habitat, and describe how each was used.
15. (a) Outline the features which enable you to classify an organism as (i) an arthropod, (ii) an insect. Insects are not always regarded as pests. State *two* ways in which insects are useful.
- (b) With the aid of labelled diagrams describe the life cycle of a named insect.
Explain the terms ecdysis and metamorphosis and outline their importance in the life cycle.