Write your Examination Number here

AN ROINN OIDEACHAIS

LEAVING CERTIFICATE EXAMINATION, 1976

BIOLOGY—ORDINARY LEVEL

FRIDAY, 18 JUNE—AFTERNOON, 2 to 4.45

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 120 minutes for Part II.

PART I (120 marks)

Answer **six** of the questions (1–7). 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. In each case put the symbol √ in the box under the correct answer.

(*a*) Bile is secreted by the

spleen	duodenum	liver	stomach
☐	☐	☐	☐

(*b*) Which of the following elements is always present in protein?

P	Ca	N	Mg
☐	☐	☐	☐

(*c*) Lenticels are found on the

petal	leaf	stem	anther
☐	☐	☐	☐

(*d*) The nucleus contains

centrioles	chromosomes	chloroplasts	lysosomes
☐	☐	☐	☐

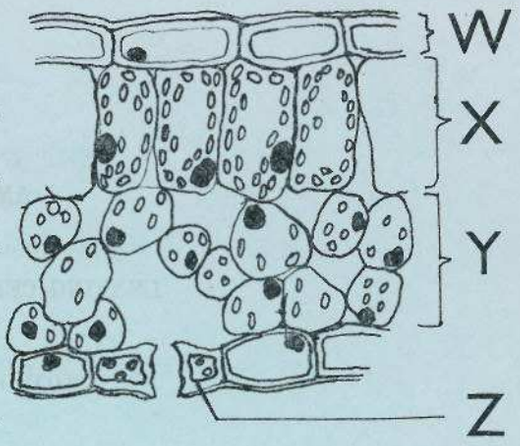
(*e*) Which has a chitinous exoskeleton?

amoeba	bee	earthworm	man
☐	☐	☐	☐

(*f*) Red blood cells are formed in the

liver	bone marrow	brain	muscle
☐	☐	☐	☐

2. The diagram shows a vertical section of a leaf.
Name the parts W, X, Y, Z.



W.....

X.....

Y.....

Z.....

What is the function of Z?

.....

Write a general equation to represent the process of photosynthesis.

.....

3. From this list

fox, rabbit, man, frog, *Mucor*, *Rhizopus*, virus, fern,

select one example of each of the following.

(i) saprophyte:.....

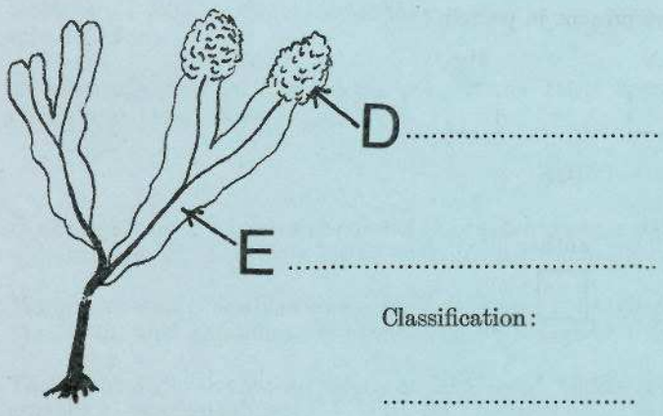
(ii) omnivore:.....

(iii) an animal which hibernates:.....

(iv) an organism which makes its own food:.....

(v) an organism which multiplies only in the cells of other organisms:.....

4. Name the parts labelled and classify each organism as one of the following:
Mollusca, Fungi, Arthropoda, Tracheophyta, Algae.

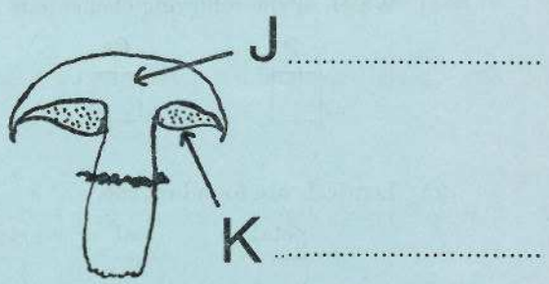


D.....

E.....

Classification:

.....

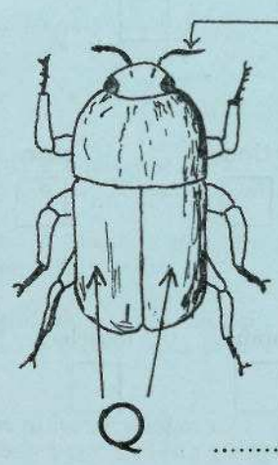


J.....

K.....

Classification:

.....



P.....

.....

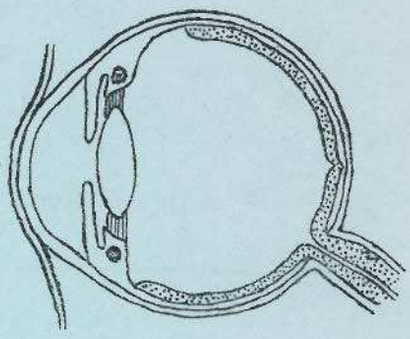
Classification:

.....

5. The diagram shows a vertical section of the human eye.

Insert the letters W, X, Y and Z on the diagram to show the positions of:—

the vitreous humour (W); the retina (X); the iris (Y) and the lens (Z).



What is the function of

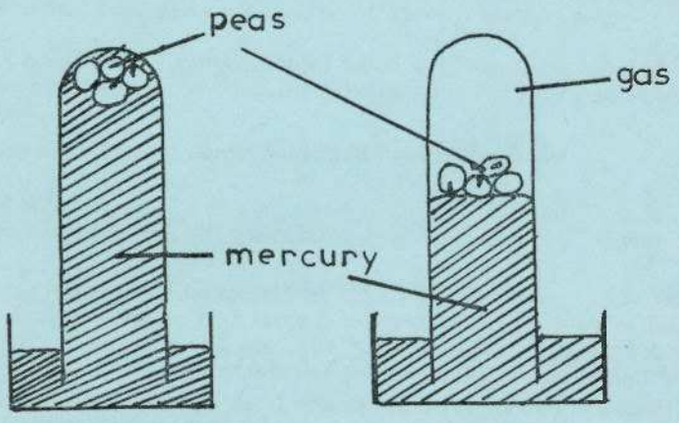
(i) the iris:.....

.....

(ii) the lens:.....

.....

6. Some peas have their seed coats removed and are soaked in water. An experiment is then set up, as shown in the diagram, care being taken to eliminate air when the peas are inserted into the test-tube at the start.



Start after 24 hours

What is this experiment designed to show?

.....

Name the gas that collects in the tube. .....

Outline a test to identify the gas. .....

.....

Suggest a control for this experiment. .....

7. Give a laboratory use for *five* of the following:—

(*a*) agar jelly:.....

(*b*) iodine solution:.....

(*c*) formalin **or** ethyl alcohol:.....

(*d*) Fehling's solutions (A and B):.....

(*e*) potometer:.....

(*f*) litmus paper:.....

(*g*) clinostat:.....

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

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 any **four** questions. Each question carries 70 marks.

8. Explain the terms (i) phenotype, (ii) genotype, (iii) meiosis.
In man the character blue-eyed is recessive to brown-eyed. Using **B** to represent the dominant and **b** the recessive allele, find the genotype of each member of a family consisting of a blue-eyed mother, a brown-eyed father and two children, one with blue eyes and the other with brown eyes.

9. Describe the changes which occur in the composition of blood as it circulates through the lungs.
Name the organs of the body where the following substances enter the blood stream:—
(i) glucose, (ii) urea.
Comment on the relationship between amino acids and urea in the body.

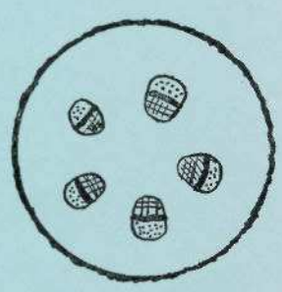
10. Answer (*a*) and either (*b*) or (*c*).
(*a*) What is meant by (i) producers, (ii) consumers, (iii) decomposers? Give examples to show how they are related.
(*b*) A pair of blackbirds produce two and sometimes three clutches of eggs in a breeding season. A clutch contains from three to five eggs. In a large country garden two pairs of blackbirds were present during 1970. In 1974 there were still only two pairs present. Suggest, by reference to variation, competition and predation, why the number of pairs present in the garden had not increased.
(*c*) Give two examples of the effect of physical or geographic factors on the distribution of a plant and an animal in a habitat you have studied.
What is a hydrophyte? Give an example.
Give one example, other than feeding relationships, from the habitat to show (i) how plants depend on animals and (ii) how animals depend on animals.

11. Explain (i) parasite, (ii) host.
Describe, mainly by labelled diagrams, the life cycle of the liver fluke or of a tapeworm.
Outline *two* methods used in the control of the parasite selected.

12. What is meant by (i) osmosis, (ii) active absorption?
In an experiment, thirty potato chips of equal dimensions were cut from a uniform batch of potatoes. Three aqueous solutions, but in different concentrations, of the same solute were made up and labelled *A*, *B*, *C*. Ten chips were then put in each solution. After one hour the chips were removed and measured. The chips from *A* had become smaller; the chips from *B* had become larger. The chips from *C* were unchanged.
(i) Which of the three solutions *A*, *B* or *C* was the most concentrated? Explain your answer.
(ii) Which solution had the same concentration as that of the cell vacuoles of the potato chip tissue?
(iii) Name a solute which might be used to make up the solutions used in this experiment.
Why does a marine fish die if it is put into fresh water?

13. (*a*) Give a labelled diagram to show the form of a fern sporophyte.

(*b*) The diagram shows a transverse section of a young dicotyledonous stem.
Explain briefly, with the aid of a similar but larger drawing, how secondary thickening occurs.



14. What is a hormone? Show, on an outline diagram of the human body, the names and locations of the principal endocrine glands in man. Select one of these glands, name a hormone it produces and state briefly the function of the hormone in the body.
What gland in the body has both an exocrine and an endocrine function? State its exocrine function.

15. Describe experiments, one in each case, to demonstrate
(i) that chlorophyll is necessary for photosynthesis,
(ii) that the speed of enzyme action is affected by temperature.