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Examination
Number here

AN ROINN OIDEACHAIS

LEAVING CERTIFICATE EXAMINATION, 1978

BIOLOGY—ORDINARY LEVEL

WEDNESDAY, 14 JUNE—MORNING, 9.30 to 12.15

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 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 a lignified tissue.
- (b) Urea is formed in the
.....
- (c) Name the metallic element in chlorophyll.
- (d) Where are sperms produced in the mammal?
- (e) *Amoeba* gets rid of excess water through the contractile.....

2. Answer each of the following. In each case put the symbol \checkmark in the box under the correct answer.

(a) Which has a chitinous exoskeleton?

Amoeba

beetle

fish

earthworm

(b) Which of the following is the best source of vitamin C?

herrings

bread

oranges

bacon

(c) The vertical growth of mosses is limited because mosses lack

rhizoids

chlorophyll

vascular tissue

flowers

(d) Lacteals function in the transport of

carbohydrates

minerals

amino acids

fats

(e) Meiosis occurs in the

stigma

ovary

petal

sepal

3. Give one function for each of the following components of blood.

- (a) Red Blood Cell
- (b) White Blood Cell
- (c) Fibrinogen
- (d) Platelet
- (e) Water
- (f) Antibodies

4. The graph shows the results obtained in an experiment on the rate of breakdown of a food substance by an enzyme at different temperatures.

At what temperature did the fastest breakdown of the food substance occur?

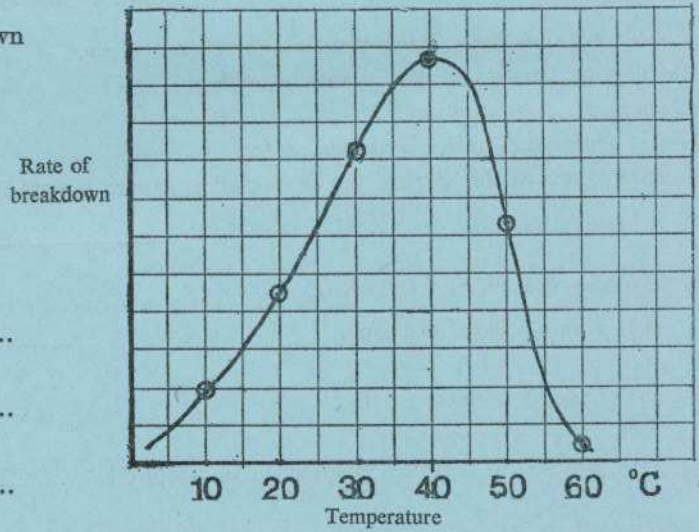
Temperature.....

Give a reason for the drop in the rate of breakdown at 50°C.

.....

.....

.....



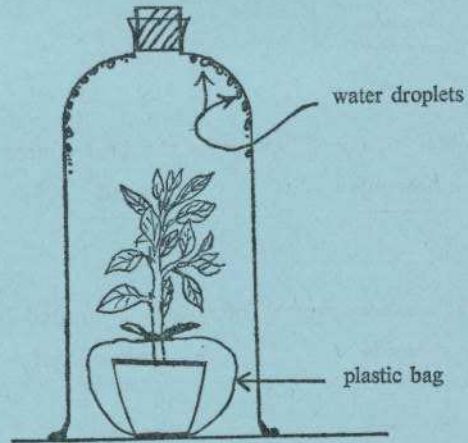
Name one enzyme and one food substance that might be used in this experiment.

Enzyme..... Food substance.....

5.

(a) What biological process is this apparatus used to demonstrate?

.....



(b) State the purpose of the plastic bag.

.....

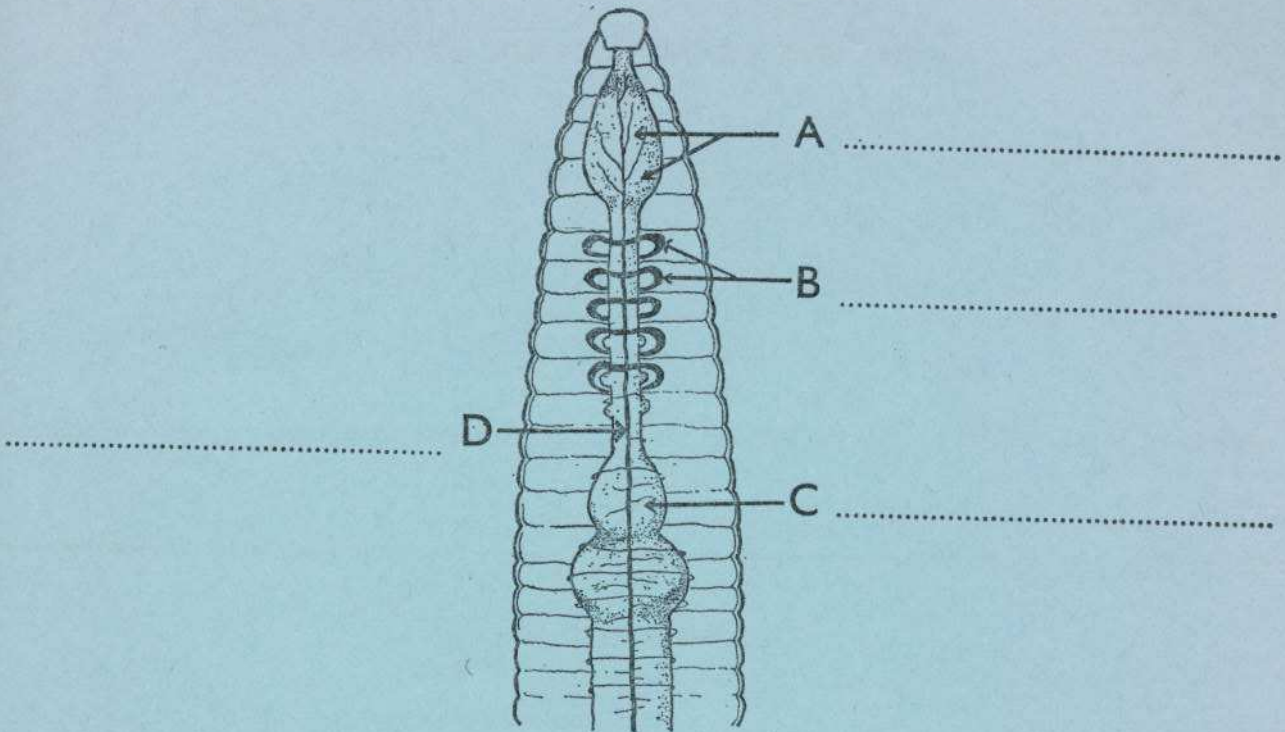
(c) State two processes which have a part in raising water from the roots of the plant to the leaves.

- (i)
- (ii)

(d) Name the tissue in which water is transported upwards in plants.

.....

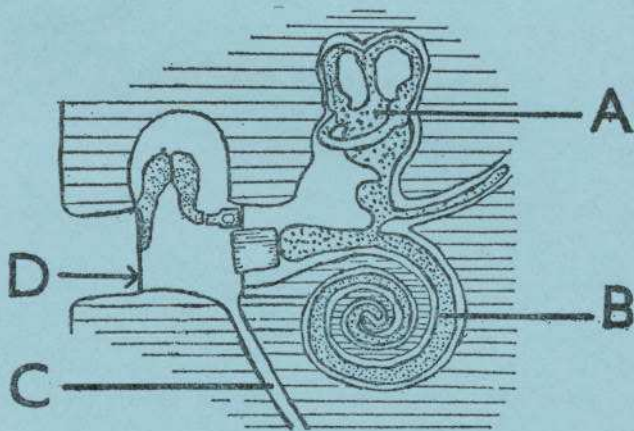
6. On the diagram of a dissected earthworm name the parts labelled A, B, C, D.



Give two ways in which earthworms are of benefit in the soil.

- (i)
-
- (ii)
-
-

7. Name the structures labelled A, B, C, D, in the diagram of the ear.



- A. C.....
- B. D.....

State briefly one function of each of the labelled structures.

- A.
- B.
- C.
- D.

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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. Name a deciduous tree you have studied. Draw large labelled diagrams to show the external structure of the following parts of the tree you name: (i) a leaf, (ii) a fruit, (iii) a two year old twig as it appears in winter. A tree produces a large number of seeds each autumn yet only a few of these survive to maturity. List five environmental factors which might prevent the survival of the seeds and seedlings.
9. Describe with the aid of labelled diagrams the life cycle of a moss or fern. With reference to the life cycle you have described, explain alternation of generations. How does the plant chosen depend on external water for completion of its life cycle?
10. (a) Give an account with the aid of labelled diagrams of the part played by the following in breathing: intercostal muscles, ribs, diaphragm, alveoli.
(b) Describe an experiment to show that heat is produced during germination.
11. (a) Using a labelled diagram, describe the structure of *Amoeba*. Explain how *Amoeba* obtains its food.
(b) List four living and four non-living components of soil. Describe an experiment to measure the amount of one of the non-living components in a soil sample.
12. (a) Show, using a labelled diagram, the structure of a mammalian tooth. Name two types of tooth and state how they differ in function.
(b) List the constituents of a balanced diet other than carbohydrate. Give one function in the body for each of three of the constituents in your list.
What happens to excess carbohydrate in the body?

[P.T.O.]

13. (a) In guinea-pigs the character white coat colour (b) is recessive to black coat colour (B).
- A pure-breeding black guinea-pig is crossed with a pure-breeding white guinea-pig. Show the genotypes of the gametes and the genotypes and phenotypes of the progeny of the cross.
 - You are given a black male guinea-pig of unknown genotype and asked to find out whether it is homozygous or heterozygous. What cross would you carry out?
- (b) Explain the following terms: locus, allele.
14. List the external factors on which the rate of photosynthesis depends.
Describe with the aid of a labelled diagram the structure of a leaf as seen in a vertical section.
Describe an experiment to show that carbon dioxide is necessary for photosynthesis.
15. Name the type of ecosystem you have studied. Answer the following, using examples where necessary from that ecosystem.
- What does the diagram represent?
Give another example of such a diagram.
 - Of the organisms named in the diagram state (a) which is an autotroph, and (b) which is a primary consumer.
 - At which level in the diagram is the greatest amount of energy to be found?
 - Give two ways in which bacteria are of benefit in the ecosystem.
 - Give an example of a food web. Your example should contain at least eight components.
 - Give an example of competition.

