

AN ROINN OIDEACHAIS

LEAVING CERTIFICATE EXAMINATION, 1981

BIOLOGY—ORDINARY LEVEL

TUESDAY, 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 gas produced during photosynthesis.
- (b) Give the name of an enzyme which breaks down fats.
- (c) Where is pollen produced in the flowering plant?
- (d) Pathogens are.....which cause
- (e) *Spirogyra* reproduces sexually by a method called

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

- (a) Which of the following helps to bind the soil?

sand	minerals	silt	clay
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- (b) The genotype of an organism describes its

gametes	genitals	genetic content	germination
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- (c) Which of the following diseases is caused by a virus?

Tuberculosis	Chicken pox	Pneumonia	Typhoid
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- (d) Which of the following is *not* an Angiosperm?

dandelion	grass	oak	spruce
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- (e) In the human female, fertilisation usually takes place in the

oviduct	ovary	vagina	uterus
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Give one food source and one function in the body for each of the following constituents of a balanced diet

Constituent	Food Source	Function
Protein

Vitamin C

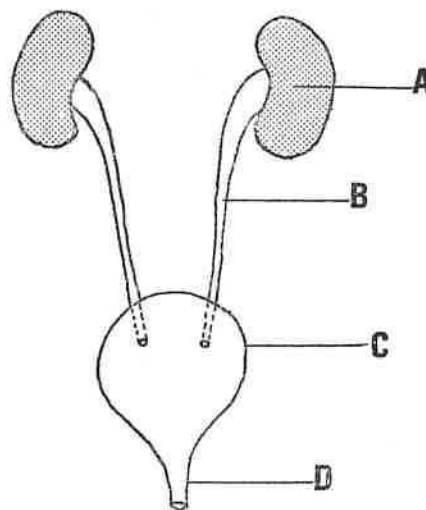
Fat

Iron

Roughage

4. The diagram represents the human excretory system. Name the parts labelled A, B, C, D.

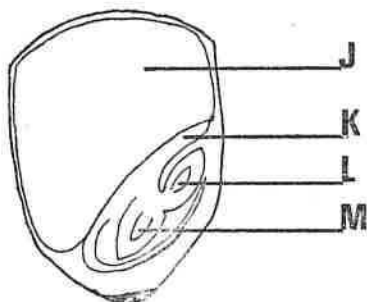
- A
- B
- C
- D



Mark with the letter X the position of the adrenal glands.
Name one hormone produced by the adrenal glands and state its function.

- Hormone
- Function
-

5. Name the parts labelled J, K, L, M on the diagram of the maize grain shown in longitudinal section.



- J
- K
- L
- M

Give the function of J

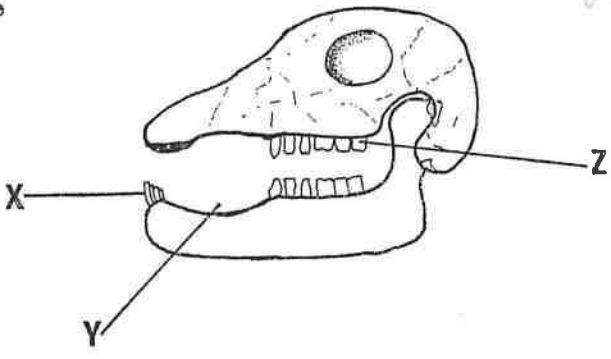
Is the maize grain a fruit or a seed?

Give a reason for your answer

.....

6. The diagram shows the skull of a mammal. State whether you think this animal is a carnivore, herbivore or omnivore.

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Give two reasons to support your choice.

- (i)
-
- (ii)
-

Name the structures labelled X and Z.

X

Z

What is the space labelled Y called?

Y

Mention *one* way in which the structure labelled Z shows adaptation to function.

.....

7. A young seedling was left in a tube of red dye solution in a warm room for 48 hours. (Figure A).

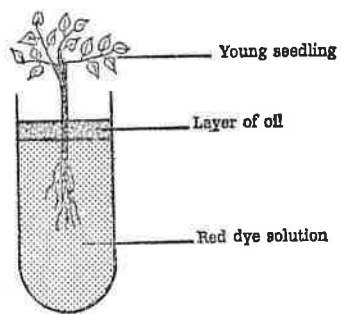


Fig.A

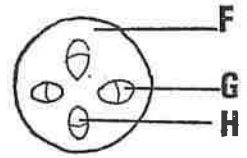


Fig.B

- (a) What happens to the water level in the tube at the end of 48 hours?.....
-
- (b) What is the purpose of the oil layer?.....
-
- (c) After 48 hours, a section of the stem was cut and examined under the microscope, Figure B. State in which labelled tissue (F, G or H) you would now expect to find the red dye.
- Name this tissue.
- (d) The seedling for this experiment should be dug up *carefully* from the soil and not pulled out of the ground. Suggest a reason for this.
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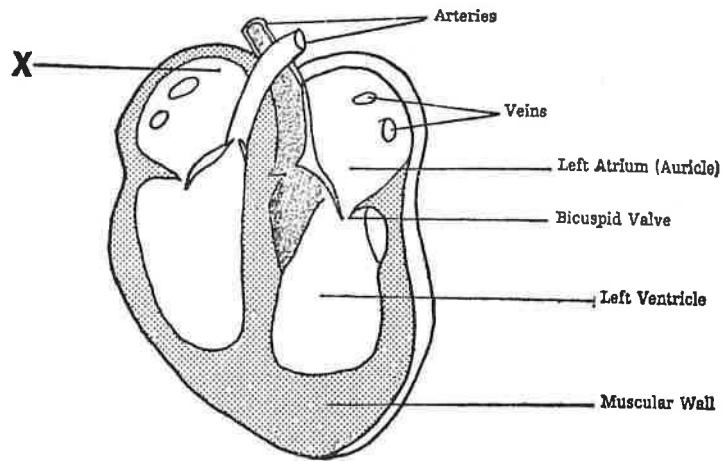
Part I is on a separate sheet which provides spaces for your answers. The completed sheet should be enclosed in your answer-book.

Part II (280 marks)

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

Answer four questions. Each question carries 70 marks.

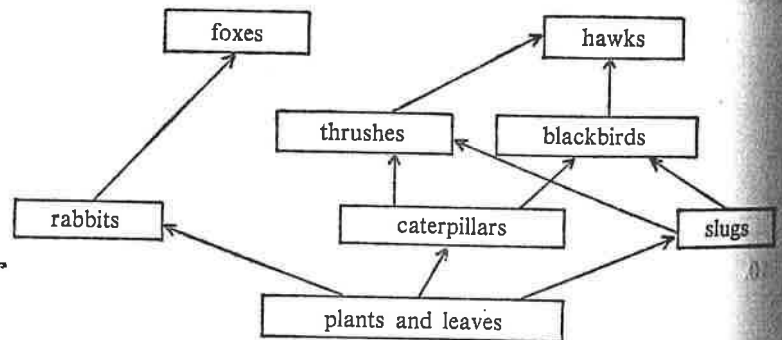
8. Explain the part played by (i) frost, (ii) temperature change, (iii) water, (iv) wind, in the formation of soil. Describe an experiment to compare the drainage (porosity) of a sandy soil and a clay soil. Which soil type would you expect to have the greater porosity? Give a reason for your answer. Addition of lime to soil is a common agricultural practice. Briefly outline the physical, chemical and biological effects of liming a soil.
9. (a) Explain the terms: incomplete dominance, haploid.
(b) In man there are 46 chromosomes in each somatic (body) cell. How many chromosomes are there in (i) a stomach cell, (ii) an egg cell, (iii) a liver cell?
(c) In humans, normal skin pigment (N) is dominant to albinism (n) and normal height (H) is dominant to short height (h). Show the possible genotypes and phenotypes of the offspring from the following cross; NNHH × NnHh.
10. What is meant by a reflex action? Describe with the aid of a labelled diagram what happens when your hand accidentally touches a hot object. Outline a simple experiment to demonstrate that the human tongue is sensitive to different tastes. State two ways in which nerve action differs from hormonal action.
11. (a) Draw a fully labelled diagram of a leaf in transverse section. Explain how the structure of the leaf is so well suited to its role in photosynthesis.
(b) Describe how you would show that there are several pigments in a chlorophyll extract. List any three pigments you would expect to find.



The diagram shows the structure of the mammalian heart in section. From the information in the diagram

- (i) state two differences between the atria (auricles) and the ventricles.
 - (ii) which side of the heart is the larger? Suggest why this should be so.
 - (iii) what is the function of the bicuspid valve?
 - (iv) name and give one function of the structure in the position X.
- (b) In an experiment, some frog red blood corpuscles were placed in each of the following solutions:—
 A—0.2% sodium chloride solution, B—0.7% sodium chloride solution, C—1.6% sodium chloride solution.
 After a few minutes the corpuscles were examined under the microscope. The corpuscles in A had burst; the corpuscles in B remained unchanged; and the corpuscles in C had shrivelled up.
- (i) In terms of osmosis, suggest an explanation for the appearance of the red blood corpuscles in solution C.
 - (ii) Which of the three sodium chloride solutions approximates to the concentration of blood plasma?
- (c) Describe the structural and functional differences between an artery and a vein.

13. The diagram represents part of a food web of a woodland.



- (a) From the food web, name:
 - (i) a primary producer.
 - (ii) a primary consumer.
 - (iii) all the secondary consumers.
 - (b) From the food web, extract:
 - (i) a simple food chain.
 - (ii) a pyramid of numbers.
 - (c) Imagine that large numbers of hawks were killed. Predict the short term effect this would have had on the numbers of (i) foxes, (ii) blackbirds, (iii) plants and leaves.
 - (d) Describe *two* methods used to estimate the number of animals and *two* methods used to estimate the number of plants in the habitat you studied.
14. (a) By means of a well labelled diagram *only*, describe the external structure of a named moss or fern.
- (b) Give an account of (i) the circulatory system, and (ii) the process of nutrition, in the earthworm. Earthworms are considered important to agriculture. Give three reasons to support this statement.
15. (a) List five structures you would expect to see in a typical plant cell when viewed with an electron microscope. State the function of each structure you mention.
- (b) Draw a large labelled diagram of a yeast cell and describe its main method of reproduction. State *two* ways in which yeast is economically useful and *two* ways in which it is harmful.
- (c) What is an enzyme?
 Describe an experiment to show the effect of pH on the rate of enzyme action.