

Write your Examination Number here

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AN ROINN OIDEACHAIS

LEAVING CERTIFICATE EXAMINATION, 1984

BIOLOGY—ORDINARY LEVEL

THURSDAY, 14 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 by placing the correct answer (a), (b), (c) or (d) in the space provided.

(i) Which of the following vitamins is made in human skin in sunlight?

- (a) vitamin K
- (b) vitamin D
- (c) vitamin C
- (d) vitamin B

Answer .....

(ii) Small openings on the surface of young woody stems, to allow exchange of gases, are called

- (a) meristems
- (b) stomata
- (c) lenticels
- (d) petioles

Answer .....

(iii) The correct sequence of blood flow through the heart chambers is

- (a) left ventricle, left auricle (atrium), right ventricle, right auricle (atrium)
- (b) right auricle (atrium), left auricle (atrium), right ventricle, left ventricle
- (c) right auricle (atrium), right ventricle, left auricle (atrium), left ventricle
- (d) left ventricle, right ventricle, left auricle (atrium), right auricle (atrium)

Answer .....

(iv) An organism that contains a contractile vacuole is most likely to live

- (a) in another organism
- (b) in fresh water
- (c) in seawater
- (d) on land

Answer .....

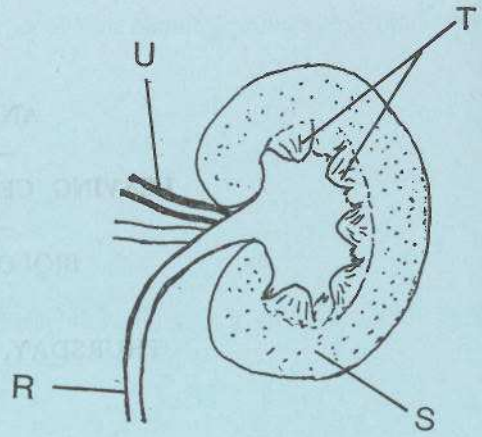
(v) A lichen consists of a symbiotic association between

- (a) an alga and a fungus
- (b) an alga and a bacterium
- (c) a bacterium and a fungus
- (d) a bacterium and a virus

Answer .....

2. Name the parts labelled in the diagram of the kidney.

- R .....
- S .....
- T .....
- U .....



Where does the tube R lead to?

.....

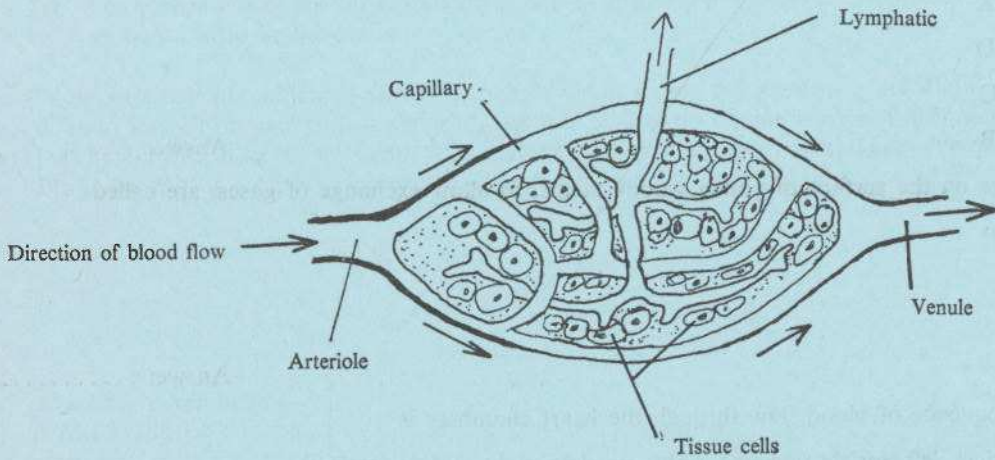
From which major blood vessel does U come?

.....

Give two functions of the kidney.

- (i) .....
- (ii) .....

3. The diagram shows the relationship between capillaries, cells, and lymphatics. The cells are bathed in tissue fluid. Substances leak from the capillaries.



Why do substances leak from the capillaries?

.....  
.....

Name four substances that might leak from the capillaries.

- (i) ..... (ii) .....
- (iii) ..... (iv) .....

Give two functions of the lymphatic system.

- (i) .....
- (ii) .....

4. Nitrifying, nitrogen-fixing and denitrifying bacteria all take part in the nitrogen cycle. Briefly explain the function of each.

nitrifying bacteria .....

.....

nitrogen-fixing bacteria .....

.....

denitrifying bacteria .....

.....

Give examples, two in each case, of the beneficial and harmful effects of fungi to humans.

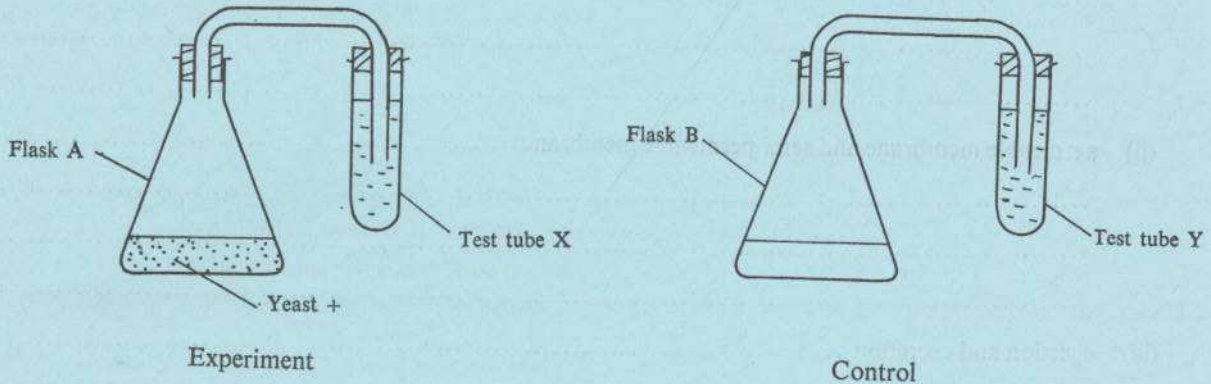
Beneficial (i) .....

(ii) .....

Harmful (i) .....

(ii) .....

5. In an experiment to show that yeast produces carbon dioxide as a result of respiration, apparatus was set up as shown in the diagram.



What substance(s), together with yeast, are placed in flask A?

(i) ..... (ii) .....

What liquid is placed in test tubes X and Y?

What happens to the liquid during the experiment?

in test tube X .....

in test tube Y .....

Name the method by which yeast reproduces asexually .....

6. (a) The diagram shows an external view of the human brain.

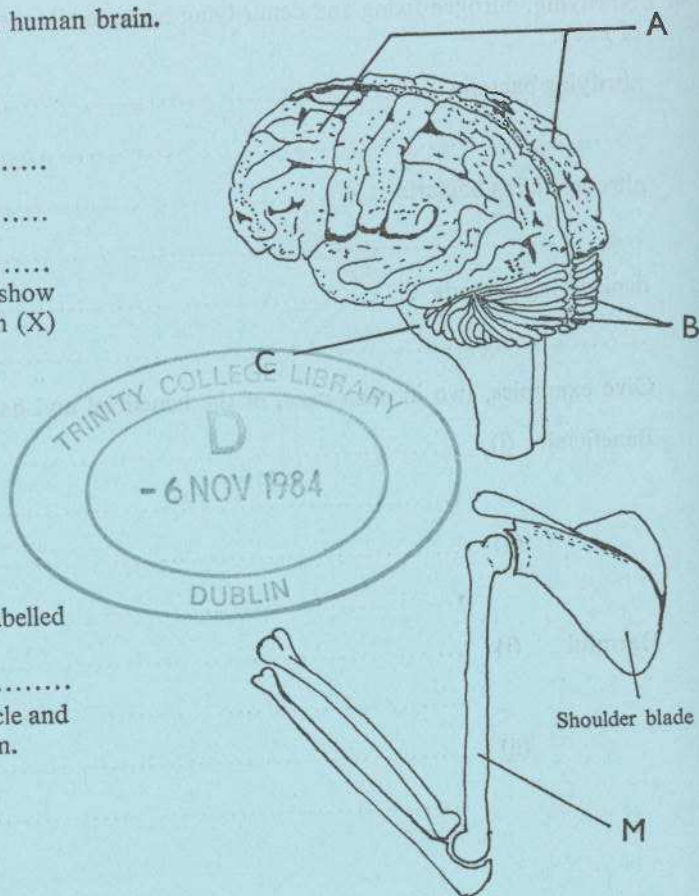
Name the parts labelled.

A .....

B .....

C .....

Insert the letters X and Y on the diagram to show the area of the brain concerned with vision (X) and hearing (Y).



(b) In the diagram of the arm name the bone labelled

M .....

Draw in and label on the diagram the muscle and tendons involved in lowering the fore arm.

7. Distinguish between the following pairs of terms by briefly explaining each term.

(i) mitosis and meiosis .....

(ii) permeable membrane and semi-permeable membrane .....

(iii) egestion and excretion .....

(iv) gamete and gametophyte .....

(v) collenchyma and parenchyma .....

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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)

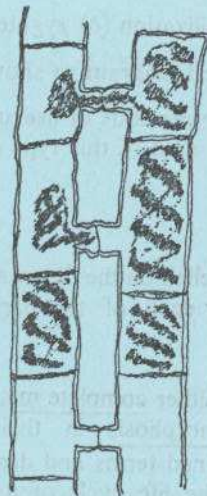
Write your answers to this part in your answer-book.

Answer four questions. Each question carries 70 marks.

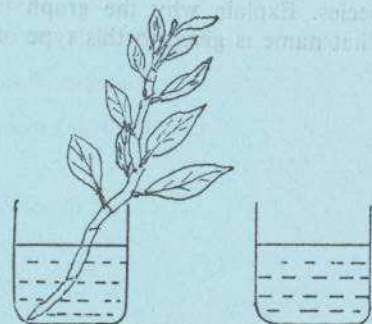
8. (a) The diagram shows *Spirogyra* reproducing. What name is given to this method of reproduction?

Outline the complete process with the aid of labelled diagrams.

- (b) Describe how *Amoeba* obtains its food supply. State how the mode of nutrition in *Amoeba* differs from that in *Spirogyra*.
- (c) Give two differences between *Spirogyra* and *Amoeba* that would enable you to classify one as a plant and the other as an animal.



9. (i) Draw a large labelled diagram of a transverse section of a root. Explain how water enters the root from the soil.
- (ii) Root pressure and transpiration both play a part in water movement in a plant. Explain the underlined terms. Describe an experiment to show root pressure.
- (iii) In an experiment two identical beakers containing equal volumes of water were set up and kept in identical environmental conditions. A leafy shoot was placed in one beaker as shown in the diagram. The mass of each beaker with its contents was obtained at the start of the experiment and again after three hours. From the information given in the table below, calculate the rate of transpiration of the shoot.

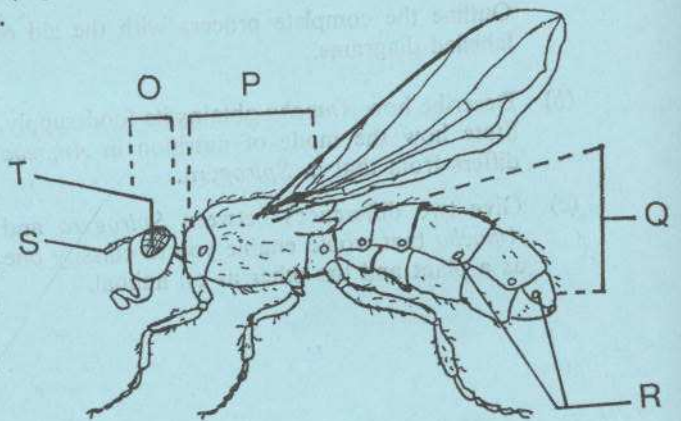


	Mass	
	at start of experiment	after 3 hours
Beaker with water and plant	425 g	400 g
Beaker with water	304 g	300 g

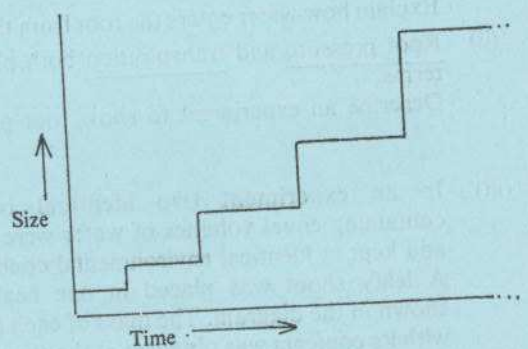
10. Draw a large labelled diagram to show the structure of the human eye. Give a function for each of *six* of the parts labelled. Some people have to wear glasses for close-up work e.g. reading. What type of lens is in these glasses and explain with the aid of a diagram how these glasses correct the eye defect.
11. (i) Explain the terms (a) interdependence, (b) consumer, (c) food web, as used in ecology.  
 (ii) State the type of habitat you have studied, and name two animals and two plants found there. Say how each is adapted to living in that habitat.  
 (iii) Give a biological explanation in each case for *three* of the following.  
 (a) Insecticides should not be over-used.  
 (b) Breast-feeding of a baby is said to be superior to feeding with cow's milk.  
 (c) Lead-free petrol is now used in some countries.  
 (d) A doctor rubs the skin with alcohol before giving an injection.
12. What is meant by the following genetic terms (i) dominant, (ii) locus, (iii) multiple alleles?  
 A woman with blood group A marries a man with blood group O. Show by means of diagrams  
 (i) the possible genotype(s) of each of them;  
 (ii) the gamete type(s) they each produce;  
 (iii) the possible genotypes and phenotypes of their children.  
 Outline an experiment you would carry out to determine a person's blood group.
13. (i) Define (a) fertilization (b) zygote. Give two differences between sexual and asexual reproduction.  
 (ii) Draw a labelled diagram to show the structure of a named flower.  
 (iii) Describe *three* methods of asexual reproduction (vegetative propagation) in flowering plants. Give two advantages to man of this type of reproduction.

Name the parts labelled on the diagram of an insect. Give a function for each of the parts labelled R and S.

Insects can show either complete metamorphosis or incomplete metamorphosis in their life cycles. Explain the underlined terms and describe with the aid of diagrams the life cycle of a named insect showing complete metamorphosis.



The graph shows the growth of a particular insect species. Explain why the graph takes this shape. What name is given to this type of growth?



15. Answer *two* of the following.
- (a) List the components of a fertile soil. Explain how two of the components are important to plant life. Describe an experiment to measure the humus content of a sample of soil.
- (b) What is meant by photosynthesis? Explain with the aid of a labelled diagram how the structure of a leaf is well suited to its function as a photosynthetic organ.
- (c) Give details of what happens in the ovary *and* in the uterus during a 28 day menstrual cycle in a woman assuming that fertilization does not take place. (Relate each event to time.)
- (d) State the location and function of the pacemaker in the heart. Describe experiments; one in each case, to show the effect of exercise on (i) breathing rate and (ii) heart beat in the human.