

Write your Examination Number here

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AN ROINN OIDEACHAIS

LEAVING CERTIFICATE EXAMINATION, 1983

Nº 31459

BIOLOGY—HIGHER LEVEL

TUESDAY, 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 five of the following.

- (a) Name an animal in which ecdysis occurs. ....
- (b) Give the precise location of *one* meristem. ....
- (c) What type of lens is used in correction of short sight (myopia)? .....
- (d) Name the small air sacs in the lungs. ....
- (e) Bacteria responsible for infectious diseases are known as .....
- (f) Name the method by which *Amoeba* moves. ....

2. (i) Name the organism shown in the diagram.

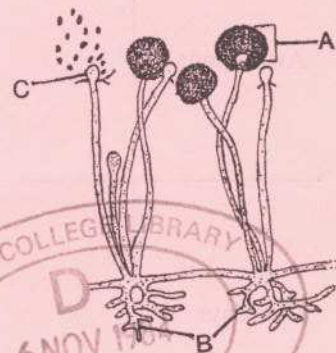
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Label the parts.

A .....

B .....

C .....



State a function of each of the parts A and B.

A .....

.....

B .....

.....

(ii) In the spaces provided indicate whether the disease is caused by a bacterium, a fungus or a virus.

Disease	Cause
potato blight	.....
polio	.....
influenza	.....

3. The following hormones play a major role in controlling the menstrual cycle: follicle stimulating hormone (F.S.H.), oestrogen, luteinizing hormone (L.H.), progesterone. Give two functions, within the menstrual cycle, for each of these hormones.

F.S.H. (i) .....

.....

(ii) .....

.....

Oestrogen (i) .....

.....

(ii) .....

.....

L.H. (i) .....

.....

(ii) .....

.....

Progesterone (i) .....

.....

(ii) .....

.....

4. In each of the spaces provided write in the name of an organism belonging to the phylum given. State two reasons in each case for including the organism in that phylum.

Phylum	Organism	Reasons
Arthropoda		1 .....
		2 .....
Chordata		1 .....
		2 .....
Coelenterata		1 .....
		2 .....
Platyhelminthes		1 .....
		2 .....



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

(i) fibrin and fibrinogen .....

.....  
.....  
.....

(ii) qualitative study and quantitative study.....

.....  
.....  
.....

(iii) osmosis and diffusion .....

.....  
.....  
.....

(iv) heterozygous and homozygous.....

.....  
.....  
.....

(v) gametophyte and sporophyte.....

.....  
.....  
.....

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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)

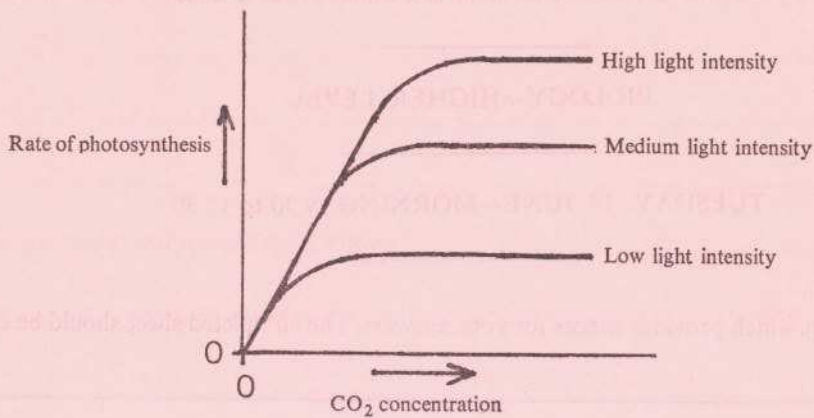
Write your answers to this part in your answer-book.

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

8. Outline the complete aerobic respiration of a molecule of glucose. Comment on the role of hydrogen carriers in respiration.  
Name one vitamin that has a function in respiration.  
Comment briefly on the end result of respiration in yeast and in muscle under anaerobic conditions.  
Describe an experiment to show the effect of exercise on the rate of breathing and briefly explain the results.
9. Soil in part is the result of the weathering of rocks by the sun, wind and water. Outline how this weathering occurs. What other processes contribute to the formation of soil?  
State what is meant by available water and describe an experiment to determine the percentage of available water in a soil sample.  
Describe how atmospheric nitrogen is converted to a form suitable for use by flowering plants.
10. Draw a large labelled diagram of a nephron and its associated blood supply.  
What is meant by the term glomerular filtrate and how is it formed? Explain why the glomerular filtrate contains no protein.  
'The final concentration of urea in excreted urine can be over sixty times the concentration of urea in the plasma.'  
Explain why this statement is true and explain why salts are not concentrated in the urine to such an extent.
11. (i) Give an illustrated account of the structure and life cycle of *Fucus* and explain how *Fucus* uses its environment to complete its reproductive process.  
(ii) Write a note on the role of water in the completion of the life cycle of either the moss or fern.
12. (a) Draw a labelled diagram to show a transverse section of bone tissue.  
Outline experiments, one in each case, to show that bone has  
(i) an inorganic content, (ii) an organic content.  
(b) One function of the ear is to help maintain balance. Draw a labelled diagram of the part of the ear involved and explain how this function is carried out.
13. (i) What is a sere? Distinguish between a hydrosere and a xerosere.  
(ii) Describe in detail how you would make and use a transect (line or belt). State one way in which the use of a transect increased your knowledge of the habitat you have studied.  
(iii) Energy flow in an ecosystem begins with green plants absorbing sunlight energy; some of this energy is then passed through the bodies of animals in the habitat. Write an account of what happens to the energy after it has been incorporated into the plants.
14. (i) 'The sex of a child is determined by the father'. Explain this statement in terms of chromosomes.  
Why is it necessary that meiosis should occur in gamete production?  
(ii) Draw a labelled diagram to show the structure of DNA.  
Describe an experiment to show the presence of DNA in cells (e.g. in root tips of a plant).

15. Answer *two* of the following.

(a) The graphs show the results of experiments to measure the rate of photosynthesis at different light intensities.



- (i) State the relationship between CO<sub>2</sub> concentration and the rate of photosynthesis.
  - (ii) Explain the effect of varying light intensity on the rate of photosynthesis.
  - (iii) How would you measure the rate of photosynthesis?
  - (iv) Why would you keep the temperature constant during this experiment?
- (b) Draw a large labelled diagram of the mammalian heart (and associated major blood vessels) to show the main internal features. Indicate clearly the flow of the blood. Describe the stages involved in heart beat.
- (c) Explain what is meant by evolution and list three sources of evidence for evolution. Outline how the theory of evolution is supported by an example from any *one* of the sources of evidence you mention.
- (d) Describe fully the practical procedures you would use to isolate a pure culture of an air-borne micro-organism.