

JUNIOR LYCEUM ANNUAL EXAMINATIONS 2000

Educational Assessment Unit - Education Division

FORM 5

BIOLOGY

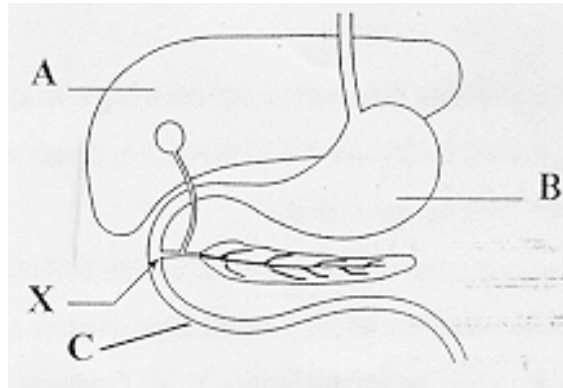
TIME 1h 45min

Name : _____ Class _____

**SECTION A : This section carries 55 marks
ANSWER ALL QUESTIONS IN THE SPACES PROVIDED.**

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1. The figure below shows part of the alimentary canal.



- a. Name the parts labelled A, B and C.
A _____; B _____; C _____ (3)
 - b. Name the part, shown in the diagram, where **bile is stored**
_____ (1)
 - c. Name **one** chemical substance passed into the digestive system at the place marked X on the diagram.
_____ (1)
 - d. Name a digestive enzyme present in the part labelled B
_____ (1)
- (6 marks)

2. Match the terms in list X with their descriptions in list Y.

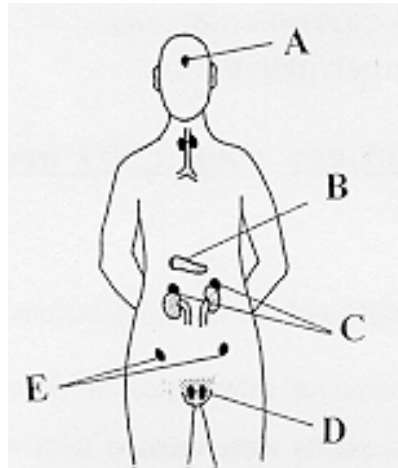
LIST X	LIST Y
1. Aorta	a. blood vessel that transports deoxygenated blood from heart to lungs.
2. Vena Cava	b. lower chamber of the heart that pumps oxygenated blood into the aorta.
3. Left Atrium (Auricle)	c. main artery which carries oxygenated blood from the heart to the body.
4. Pulmonary Artery	d. main vein that carries deoxygenated blood to the heart from the body.
5. Left Ventricle	e. upper chamber of the heart that receives oxygenated blood from the lungs.

ANSWERS:

1. _____	2. _____	3. _____	4. _____	5. _____	(5 marks)
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3. The diagram below shows the position of the main **endocrine glands** in the human being.

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- a. Identify the endocrine glands labelled A to E.
- A _____
 B _____
 C _____
 D _____
 E _____ (5)
- b. What are endocrine glands?
- _____

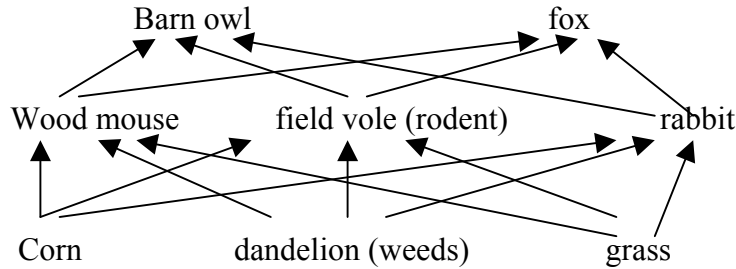
 _____ (3)
- c. State **one** function of the following parts of the human brain.
- i. Cerebrum: _____ (1)
 _____ (1)
- ii. Cerebellum: _____ (1)
 _____ (1)
- iii. Medulla Oblongata: _____ (1)
 _____ (1)
- (11 marks)

4. Cigarette smoke affects the lungs.
- a. Name 3 lung diseases which can result from active or passive smoking:
- (i) _____ (ii) _____ (ii) _____ (3)
- b. Name 2 examples of Air Pollutants which result from smoke produced from the burning of fossil fuels in power stations, industry and motor vehicles.
- (i) _____ (ii) _____ (2)
- c. Write brief notes on 'the dangers of passive smoking':
- _____

 _____ (2) (7 marks)

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5. The diagram below shows part of a food web.



- a. Name the ultimate source of energy for all the organisms in this food web.
_____ (1)
- b. Name **one** Producer: _____ (1)
- c. Suppose all the field voles were suddenly killed by disease. Why would the number of dandelions be likely to increase?
_____ (1)
- d. Write down one food chain from the above food web:
_____ → _____ → _____ (3)
- (6 marks)

6. Study the descriptions below and decide which ones belong to the column headed '*Photosynthesis*' and which ones to the column '*Aerobic Respiration*'

occurs in all cells ; takes place only in daylight; uses oxygen;
takes place night and day ; occurs only in green plants; produces food;

Photosynthesis	Aerobic Respiration

(6 marks)

7. State 3 characteristics (properties) of 'enzymes'.

1. _____

2. _____

3. _____

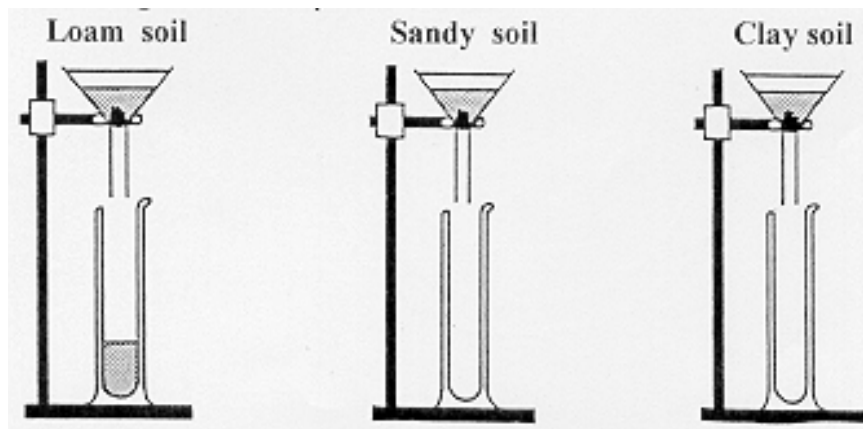
(3 marks)

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8. The following table shows the **percentage** distribution of blood groups in the United Kingdom.

	BLOOD GROUP TYPE (%)			
	A	B	AB	O
SCOTTISH	35	10	5	50
ENGLISH	40	8	3	
IRISH	25		8	35
WELSH	40	8		50

- a. Complete the table by filling in the missing percentages (%) (3)
- b. Is blood group an example of continuous or discontinuous variations?
 _____ (1)
- c. Calculate the UK average percentage (%) of persons with Blood Group A.
 _____ (1)
- (5 marks)
9. a. The first diagram shows the result of pouring water through a sample of *loam* soil. The same amount of water is poured through each of the 2 other samples and left for the same time as in loam soil. Complete the other diagrams to compare the results.



(2)

- b. Using the words *loam*; *clay*; *sandy*; complete the table below:

Properties	Soil type
Poorly aerated	
Mostly made up of large particles	
Most fertile	
Good particle mixture	

(4) (6 marks)

**SECTION B : This section carries 45 marks.
(Answer on the separate paper provided) .**

Answer Question ONE and any other TWO questions .

1. Read the following paragraph and answer the questions below:

When the mechanism of inheritance of flower colour in garden peas was investigated, red-flowered plants were crossed with white-flowered plants. The first generation of plants all had red flowers. However, when these red-flowered plants were allowed to self-fertilise, about 25% of the offspring had white flowers, the remainder having red flowers.

In a similar investigation with snapdragon plants, when red-flowered plants were crossed with white-flowered plants, the resulting first generation all had pink flowers. When these pink-flowered plants were self-fertilised, 25% of the offspring had white flowers, 25% had red flowers and 50% had pink flowers.

- a. Suggest why the results obtained with the garden pea are different from those with the snapdragon plants. (2)
- b. Using symbols and a written explanation, account fully for the result obtained with garden peas. (4)
- c. What would be the results of interbreeding the white garden peas. (2)
- d. Draw a genetic diagram, to show how the results for the snapdragon can be explained genetically. (3)
- e. Write down the genotype of the snapdragon plants with red flowers. (1)
- f. Describe an experiment which you could perform to establish the genotype of the garden peas plants with red flowers. (3)

(15 marks)

2. a. Pollination is usually aided by wind or insects.

- i. What is pollination? (2)
- ii. Name a wind pollinated and an insect pollinated flower. (2)
- iii. State 3 differences between an insect pollinated and a wind pollinated flower. (3)
- b. Draw a large labelled diagram to show the structure of a **named seed**. (4)
- c. Describe an experiment to illustrate that **oxygen** is needed for germination to occur. (4) (15 marks)
3. a. Give **one** similarity and **two** differences between Mitosis and Meiosis. (3)
- b. Name **one** site in humans and **one** site in flowering plants where you would expect to find cells undergoing **meiosis**. (2)
- c. State **one** advantage and **one** disadvantage of sexual and asexual reproduction. (2)
- d. Draw a large labelled diagram of the **female** reproductive system. (5)
- e. Indicate on your diagram, using the letters X, Y, Z where:
- X - Fertilisation normally occurs.
- Y - Implantation normally occurs.
- Z - Male gametes are deposited. (3) (15 marks)
4. a. Distinguish between '**excretion**' and '**egestion**'. (2,2)
- b. Describe, using diagram/s, '**osmoregulation**' in a **named** animal - like protist. (4)
- c. List **three** importances of water for living organisms. (3)
- d. Describe, with the help of diagram/s, the importance of the kidney nephron in water conservation. (4) (15 marks)
5. a. State **two** differences between plant and animal cells. (2)
- b. Briefly describe: i) the relationship between DNA and Nucleus.
ii) the basic structure of DNA. (1, 2)
- c. Draw clear large labelled diagrams to show the structures of:
(i) a typical bacterium. ii) a typical virus iii) a typical animal cell (3,3,3)
- d. Bacteria may be beneficial organisms. Name **one** economic importance of bacteria. (1) (15 marks)