

JUNIOR LYCEUM ANNUAL EXAMINATIONS 2000
Educational Assessment Unit - Education Division

FORM 4

BIOLOGY

TIME 1h 30min

Name : _____ Class _____

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

Do not
write in
this
margin.

1. Match the terms in LIST A with the descriptions in LIST B

LIST A	LIST B
1. Diffusion	i process of increased movement of water molecules through a selectively permeable membrane to a more concentrated solution.
2 Freely permeable membrane	ii the movement of substances, across a cell membrane, against a concentration gradient.
3 Selectively permeable membrane	iii movement of molecules of a substance from high to low concentration.
4 Osmosis	iv term to describe structure that allows rapid passage of all molecules in solution.
5 Active transport	v structure that allows small molecules to pass through, but larger ones are held back.

RESULTS:

1	2	3	4	5
---	---	---	---	---

(5 marks)

2. Complete the following table about food tests:

	Reducing Sugar	Starch	Protein	Lipid/Fat
What are the testing reagent/s?				
What is the colour of a positive result?				

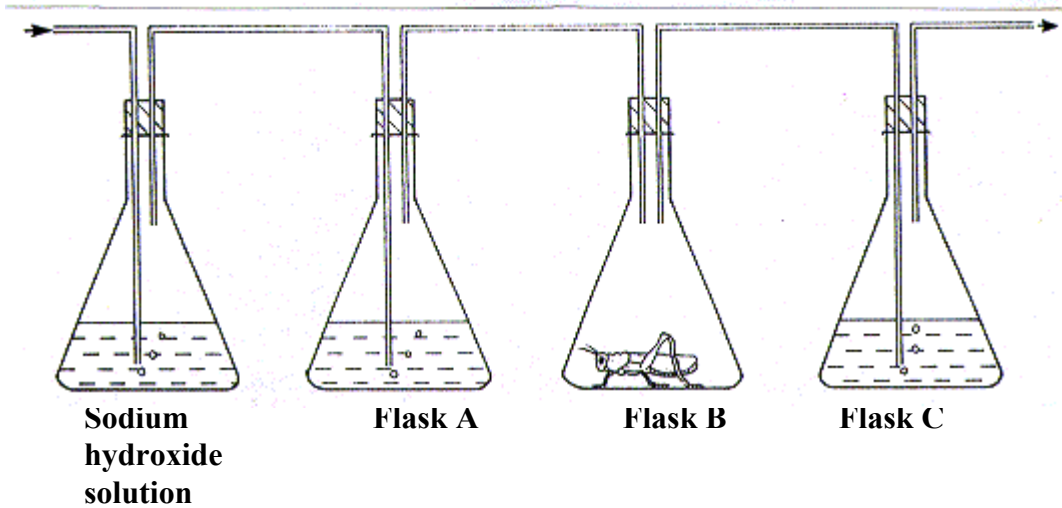
(8 marks)

3. The following diagram illustrates an experiment related to RESPIRATION.

Do not

Study the diagram carefully and answer the questions set.

write in
this
margin



- i.) Name the liquid found in Flasks A and C. _____ (1)
- ii) Why is air passed through Sodium Hydroxide solution? _____ (1)
- iii) What does the liquid in Flask A show? _____ (1)
- iv) What change would you expect to take place in the liquid in Flask C after 1 hour? _____ (1)
- v) What control would you use in this investigation? _____ (1)
- vi) Give an appropriate title for this experiment. _____ (2)
- vii) What change would you perform in Flask B so as to use a plant instead of an animal? _____ (2)

(9 marks)

4. Use the following terms to complete the paragraph:

photosynthesis ; energy ; sun ; food/carbohydrates ; 10%

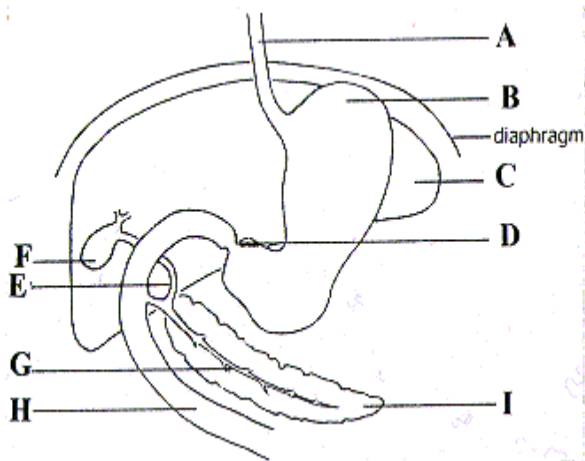
Food chains, webs and pyramids are ways of representing the flow of _____ through an ecosystem. The original source of energy is the _____. Green plants use this energy to manufacture _____ in the process of _____. At each step in the food chain, _____ of the energy is lost as it passes from one trophic level to another.

(5 marks)

5. The following diagram shows part of the digestive system of a mammal.

(i) Label the parts marked.

Do not
write in



- A: _____ (1) **this margin.**
 B: _____ (1)
 C: _____ (1)
 D: _____ (1)
 E: _____ (1)
 F: _____ (1)
 G: _____ (1)
 H: _____ (1)
 I: _____ (1)

(ii) Use **the letters** in the diagram to complete the following sentences.

- a) **Bile** is produced in _____ and stored in _____. (2)
 b) _____ is highly acidic. (1)

(12 marks)

6. (i) What is 'passive smoking'?

 _____ (2)

(ii) Name 2 respiratory diseases which could result due to smoking.

(a) _____; (b) _____ (2)

(4 marks)

7. (i) Draw a labelled diagram of the **Human Urinary (Excretory) System**:

(ii) Describe briefly: a) 'ULTRAFILTRATION' _____ (7)

 _____ (3)

(iii) Name 2 major constituents of URINE: a) _____; b) _____ (2)

(12 marks)

SECTION B : This section carries 45 marks.

(Answer on the separate paper provided) .

Answer Question ONE and any other TWO questions .

Question 1: Read the following paragraph and then answer the set questions.

Mammals, including humans, and also the birds are often called *endothermic (warm blooded) animals*. All mammals balance the heat produced in their bodies against the heat lost through their skin. The main organ of temperature control is *the skin*. However, the human being assists the natural mechanism by using clothes, heating, air-conditioning and housing.

- a) Describe the meaning of '*endothermic (warm blooded) animals*'. (1)
- b) Animals which are not endothermic (warm blooded) are said to be *ectothermic (cold blooded) animals*. Describe the meaning of ectothermic (cold blooded) animals and give 2 examples. (1,2)
- c) Draw a large labelled diagram of the human skin. (5)
- d) Describe how the human skin is adapted for *temperature regulation*. (6)
- (15 marks)**
2. a) State *three* functions of blood. (3)
- b) Tabulate *two* differences between arteries and veins. (2,2)
- c) Draw a large labelled diagram of the human heart. (4)
- d) Plan an experiment to find the effects of different types of exercise on your pulse rate. As a conclusion predict your results. (3,1)
- (15 marks)**
3. a) Write a balanced equation (in words or symbols) summarising the process of *photosynthesis*. (3)
- b) Name *two* environmental factors that can affect the rate of photosynthesis. (2)
- c) Draw a large labelled diagram to show the internal cellular structure of the leaf. (5)
- d) Describe an experiment to show that chlorophyll is necessary for photosynthesis to occur. (5)
- (15 marks)**
4. a) Write a balanced equation (in words or symbols) summarising the process of anaerobic respiration. (3)
- b) State *two* differences between aerobic and anaerobic respiration. (2)
- c) Draw a large labelled diagram of the human respiratory system. (5)
- d) Describe an experiment to show that carbon dioxide is produced during anaerobic respiration. (5)
- (15 marks)**
5. a) Describe how water in soil is transported into roots. (2)
- b) State *one* importance of water to the plant. (1)
- c) State the function of: (i) xylem ; (ii) phloem as vascular tissues. (2,2)
- d) Draw transverse sections through the (i) root (ii) stem to show the position of xylem and phloem. (4,4)
- (15 marks)**