MINISTRY OF EDUCATION AND HIGHER EDUCATION

FORM FOUR EXAMS, 2015

BIOLOGY

2015

P/LAND NATIONAL EXAMINATION BOARD

MINISTRY OF EDUCATION AND HIGHER EDUCATION
PUNTLAND NATIONAL EXAMINATIONS BOARD

Code Number | |

FORM FOUR EXAMINATIONS 2015
Time 2 hours AND 10 minutes for reading

BIOLOGY

Instructions to candidates

- Answer all the questions
- This paper consists of 12 printed pages, count it and if any is missing inform your invigilator
- Do not write your **name and roll number** on the exam paper
- Make sure that **student's profile** is attached to the exam paper, if not, inform you invigilator.
- No extra paper is allowed. Rough work can be done on page 2. This will not be marked
- If you make a mistake, **cross out the incorrect** answer and **write your correct answer.**

This exam paper consists of the following parts

- Section A: (10 multiple choices) = 20 marks
- Section B: (9 structured questions) = 80 marks

TOTAL 100 marks

For the marker only

Parts	**Marks**
Part one	
Part two	
Total	**%**

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Use this page for rough work. It will NOT be marked.

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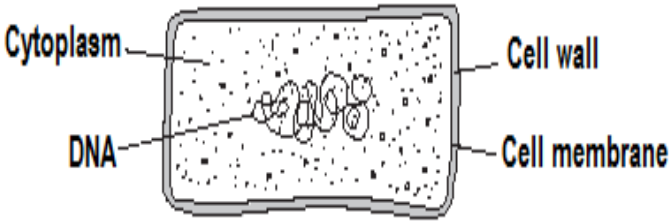
SECTION A: MULTIPLE CHOICE QUESTIONS (TOTAL 20 MARKS)

- **Answer all questions in this section. For each question in this section, circle the correct answer**

1. The diagram shows a bacterial cell.

How is this cell different from a typical animal cell?

A. It has a cell membrane.
B. It has cytoplasm.
C. It has chloroplasts
D. It has no nucleus.

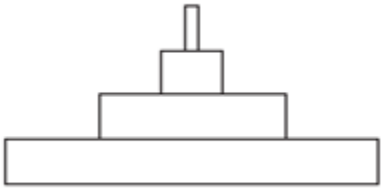


2. Where is urea made?

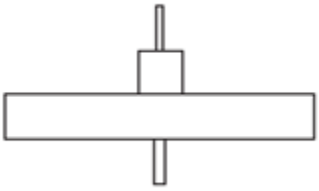
A. intestines
B. kidney
C. liver
D. muscle

3. A single tree is food for a large population of caterpillars. Several small birds eat the caterpillars. The small birds are eaten by a bird of prey.
Which is the pyramid of biomass?

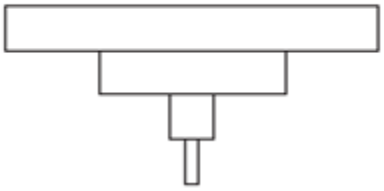
A



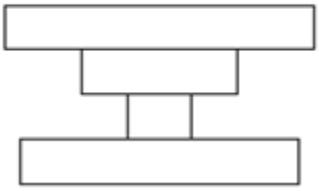
B



C



D



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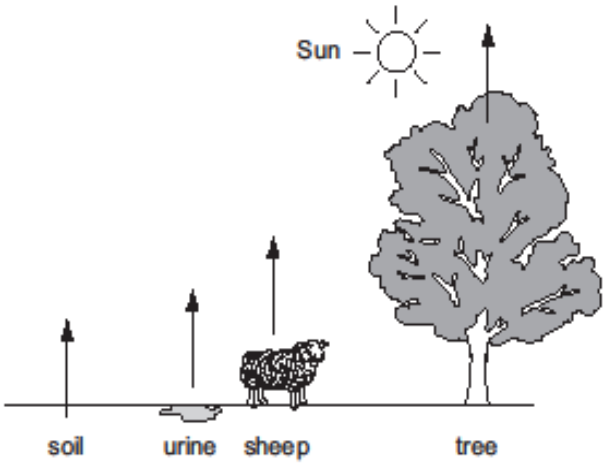
4. The diagram shows the release of a substance into the atmosphere from different sources.

What is this substance?



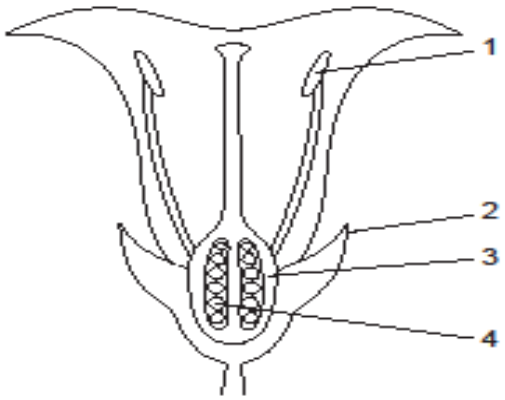
A. Nitrogen
B. hydrogen
C. urea
D. water vapour

5. Which series of terms is listed in order of increasing level of organization?

A. cell → organ → tissue → organ system
B. cell → tissue → organ → organ system
C. tissue → cell → organ → organ system
D. tissue → organ → organ system → cell

6. The diagram shows a section through a flower.

The flower is fertilized, which parts will develop into the fruit and the seed?



A. 1 and 2

B. 1 and 4

C. 2 and 3

D. 3 and 4

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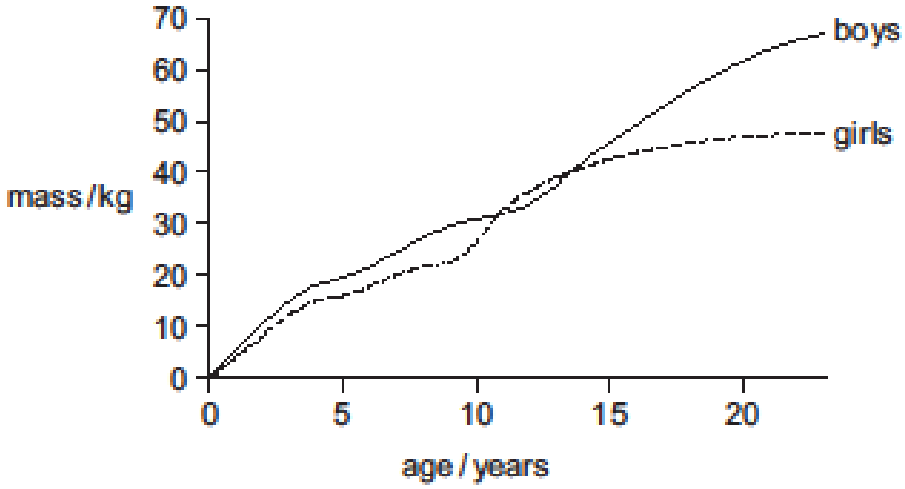
7. The graph shows the relationship between age and weight for boys and girls.

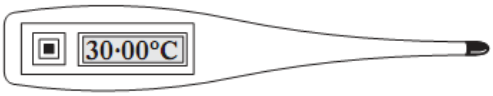


At what age does the graph show that girls are heavier than boys?

A. 3 **C.** 12

B. 7 **D.** 15

8. The diagrams of digital thermometers below show the temperatures of four patients in a hospital. Which patient is most likely to be suffering from fever?

Patient A 

Patient B 

Patient C 

Patient D 

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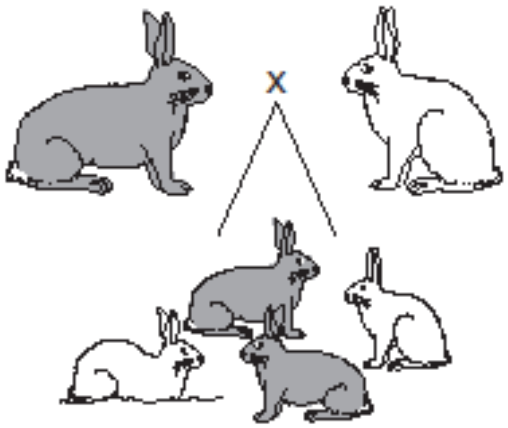
9. In rabbits, the allele for dark fur, R, is dominant to the allele for white fur, r. The diagram shows a cross between a rabbit with dark fur and a rabbit with white fur.



What are the genotypes ratios of the offspring?

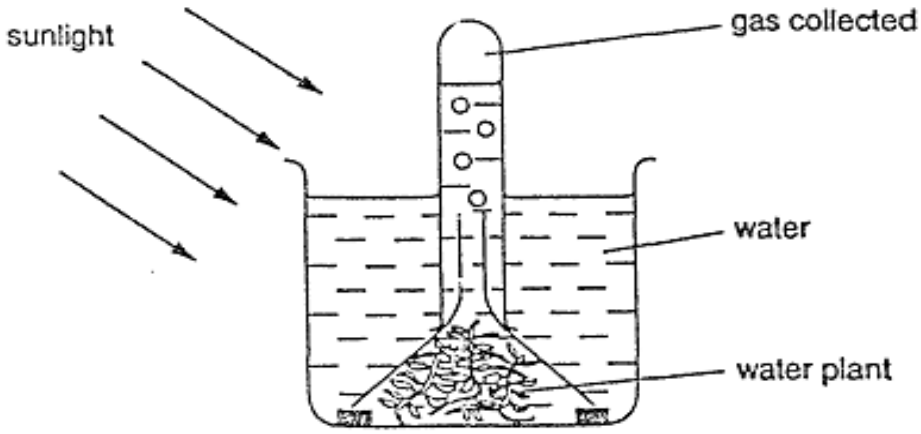
A. all Rr

B. all rr

C. 2 RR and 2 Rr

D. 2 Rr and 2rr

10. The diagram shows gas being collected from a water plant in bright sunlight.



Which gas is being collected?

A. Carbon dioxide

B. Nitrogen

C. Oxygen

D. Water vapuor

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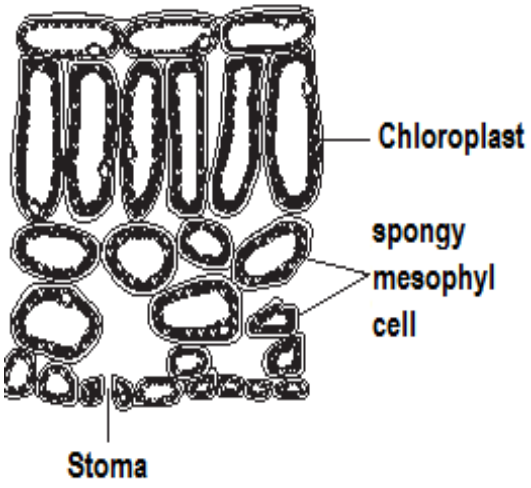
SECTION B: STRUCTRED QUESTIONS (TOTAL 80 MARKS)

➢ Answer all the following questions in space provided.

QUESTION ONE (13 MARKS)

The figure below shows a section through a leaf. A leaf is designed for photosynthesis and this process provides a supply of simple sugars for a plant.



a) State the function of the chloroplasts in photosynthesis.

_____

_____

_____ (2 Marks)

a) Explain the advantage of the distribution of the chloroplasts as shown in figure above.

_____

_____ (3 Marks)

b) Suggest the function of the stomata and the spaces between the spongy mesophyll cells in the process of photosynthesis.

_____

_____ (2 Marks)

c) Name the tissue that transports the sugars made by photosynthesis to other parts of the plant.

_____

_____ (2 Marks)

d) State the functions of xylem and phloem.

i) Function of xylem

_____

_____ (2 Marks)

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ii) Function of phloem

_____

_____ (2 Marks)

QUESTION TWO **(6 MARKS)**

The body responds to infections. (6 Marks)

a) Use words from the box to complete the sentences.

Antibiotics **cells** **pathogens** **toxins**

Bacteria and viruses are known as_____

Bacteria produce _____ that make us feel ill.

Viruses live inside body _____

QUESTION THREE **(5 MARKS)**

Yoghurt is milk that has been fermented by certain microorganism.

a) What does “fermentation” mean?

_____

_____ (1 Mark)

b) Why milk pasteurized at the start of the process

_____

_____ (2 Marks)

c) Name the type of microorganism that is commonly used in both yoghurt and cheese production.

_____

_____ (2 Marks)

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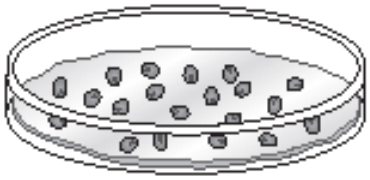
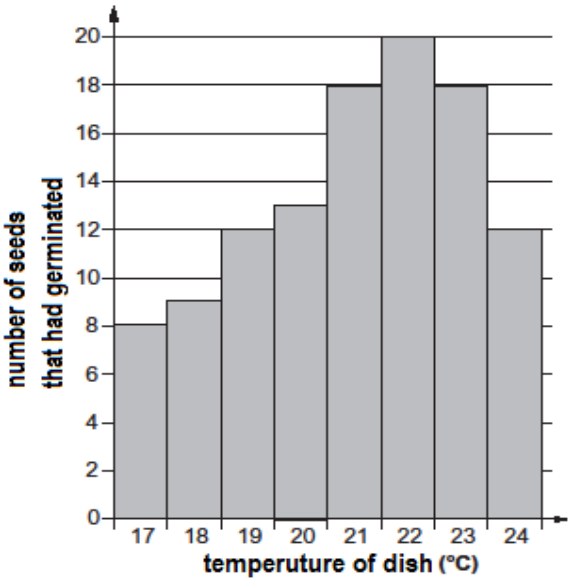
QUESTION FOUR **(9 MARKS)**

Abdul put cress seeds on wet filter paper in dishes. He put 20 seeds in each dish. Every day he added 5 cm^3 of water to each dish. He kept each dish at a different temperature. The bar chart below shows how many seeds had germinated after two days



Use the bar chart to answer the following questions.



a) How many different temperatures did Abdul use?

_____ (2 Marks)

b) What was the lowest temperature Abdul used?

_____ °C (2 Marks)

c) What was the highest temperature Abdul used?

_____ °C (2 Marks)

d) How many seeds had germinated at 21°? _____ (3 Marks)

QUESTION FIVE **(8 MARKS)**

a) Two pea plants with red flowers were crossed and produced 177 seeds. 44 of these seeds grew into white flowered pea plants and 133 seeds grew into red flowered pea plants.

I. Which flower colour is controlled by the recessive allele?

_____ (2 Marks)

II. Using the symbols R and r to represent the alleles, state the genotype of the parent pea plants.

_____ (2 Marks)

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III. A heterozygous red flowered pea plant was crossed with a white flowered plant. Predict the genotypic ratio of red flowered to white flowered plants expected from this cross. Use this space for working

Ratio _____:_____ (4 Marks)

QUESTION SIX **(10 MARKS)**

Match the hormones **A**, **B**, **C**, **D** and **E** with their functions **1-5** in the table.

A. Adrenaline

B. Thyroxin

C. Insulin

D. Estrogen

E. Testosterone

	Fill Letter	**Functions**
1.		Prepares the body for action
2.		Reduces the amount of glucose in the blood
3.		Controls the rate of chemical reactions in the body
4.		Produced in the tests of male
5.		Produced in the ovaries of female

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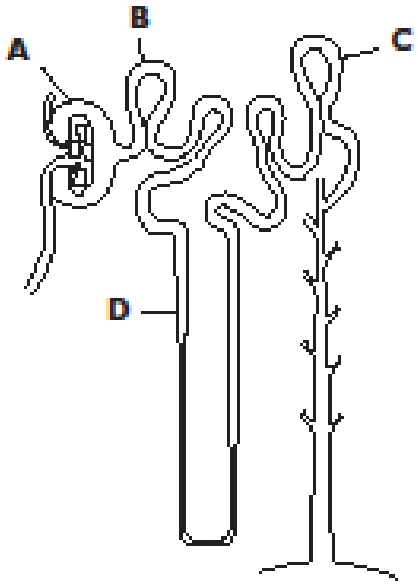
QUESTION SEVEN (13 MARKS)

This figure shows a kidney tubule (nephron).



a) Give the **letter** of the part of the kidney tubule where each of these processes takes place. (3 Marks)

I. filtration of the blood _____

II. re-absorption of glucose from the filtrate _____

III. re-absorption of most of the water from the filtrate _____

b) List **three** substances that are filtered from the blood into the kidney tubule.

1. _____ (2 marks)
2. _____ (2 marks)
3. _____ (2 marks)

c) List **two** substances or structures that remain in the blood and do not pass into the kidney tubule.

1. _____ (2 marks)
2. _____ (2 marks)

QUESTION EIGHT (8 MARKS)

Polio is a serious viral disease that can be fatal, and that often leaves an infected person with permanent paralysis.

I. Which virus causes polio disease?

_____ (2 Marks)

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II. How polio can be transmitted from one person to another?

_____

_____ (2 Marks)

III. State one way that polio can be prevented

_____ (2 Marks)

IV. State one way, other than an injection of antibodies, that a young child can be given passive immunity.

_____

_____ (2 Marks)

QUESTION NINE **(8 MARKS)**

Differentiate the following terms

a) Excretion and Ingestion

Excretion_____

_____ (2 Marks)

Ingestion_____

_____ (2 Marks)

b) Enzymes and Hormones

Enzyme_____

_____(2 Marks)

Hormones_____

_____ (2 Marks)

END

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