

FEDERAL REPUBLIC OF SOMALIA

GRADE 12 EXAMS, 2017

# BIOLOGY



OFFICE OF EXAMINATIONS AND CERTIFICATION



Name.....

School .....

Roll Number.....

**Somali Federal Ministry of Education, Culture & Higher Education**

**Form Four National Standardized Examinations.**

**MAY / JUNE 2017**

**BIOLOGY EXAMINATION**

**TIME 2 HOURS**

**INSTRUCTIONS:**

- This paper consists of 12 printed pages
- There are 2 sections:
  - ⇒ Section 1: 20 Multiple Choice Questions (40 Marks)
  - ⇒ Section 2 : 11 Structured Questions (60 Marks)
- TOTAL (100 Marks)**
- Answer all questions in the spaces provide
- No extra paper is allowed.

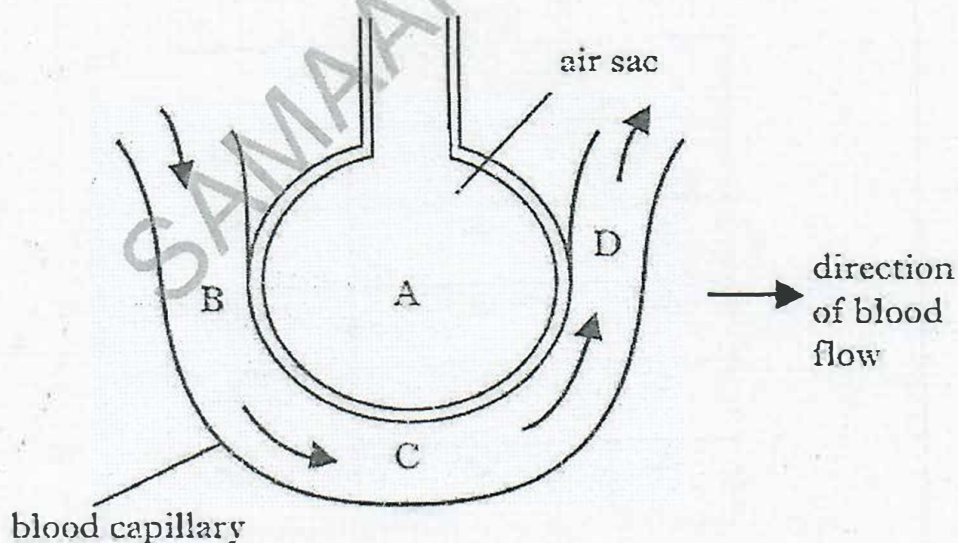


Form 4 Examination  
Biology May/ June 2017

SAMAAN PRINT

**PART 1: 20 MULTIPLE CHOICE QUESTIONS. Circle the correct answer. (40 marks)**

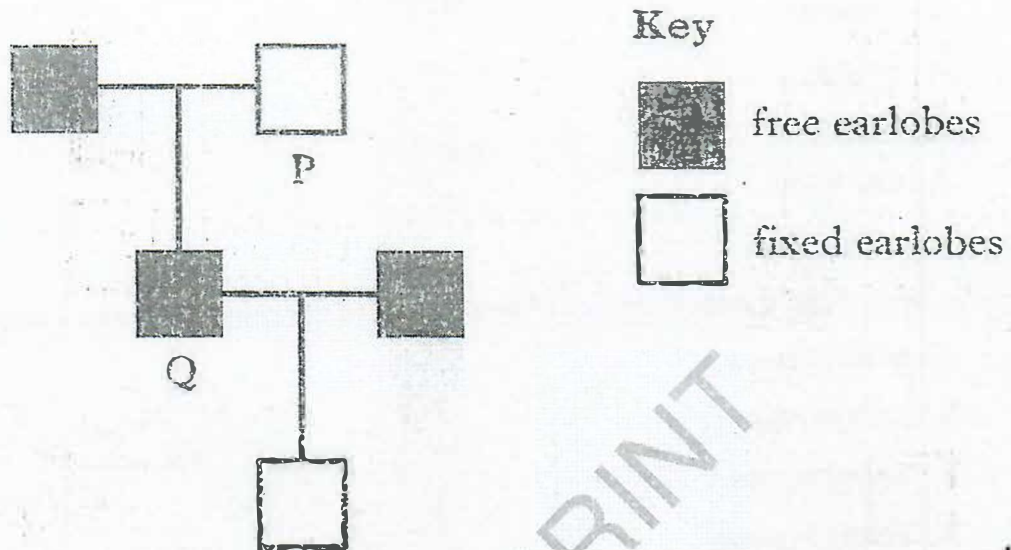
1. The basic units of structure and function of the nervous system is:
  - a. Neurons
  - b. Axons
  - c. Dendrites
  - d. Cell body
  
2. The nerves that transfer impulses from fingers to the central nervous system are:
  - a. Motor nerves
  - b. Relay nerves
  - c. Spinal nerves
  - d. Sensory nerves
  
3. The diagram below shows an air sac with part of its capillary network.



At which position would blood with the highest concentration of oxygen be found?



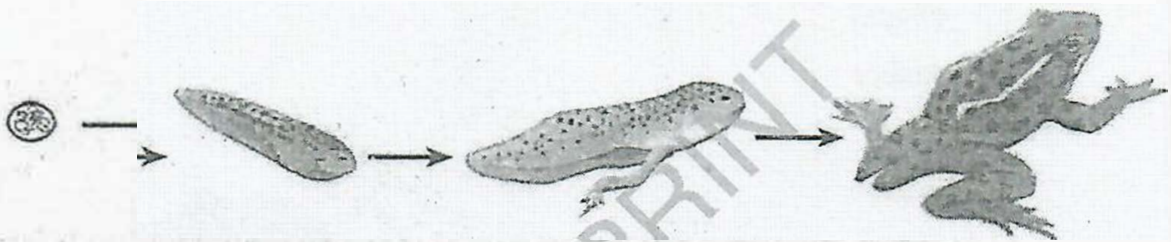
4. In humans, the allele for free earlobes (E) is dominant to the allele for fixed earlobes (e).  
The diagram below shows the inheritance of this characteristic.



Which line in the table identifies correctly the genotypes of persons P and Q?

	Genotype	
	P	Q
a.	ee	EE
b.	ee	Ee
c.	EE	Ee
d.	Ee	Ee

5. Perceiving of light of high intensity is caused by a photochemical pigment called:
- Rhodopsin
  - Iodopsin
  - Myosin
  - Retinol
6. The diagram below shows how a frog develops. A fertilized egg hatches into a tadpole with gills. The tadpole develops legs and lungs and becomes an adult frog.



What is the term for this series of changes during the life cycle of the frog?

- Fertilization
  - mutation
  - reproduction
  - metamorphosis
7. What will happen if the pituitary gland stops secretion of thyroid stimulating hormone (TSH):
- Growth will stop
  - Thyroid gland secretion will stop
  - Adrenaline hormone will not be released
  - Testosterone hormone will not be released.
8. Which of the following is not a structure of the human ear?
- Tympanum
  - Cochlea
  - Stirrup bone
  - Vitreous humor

9. The following health problem may result from chewing khat (Jacad) EXCEPT

- |                     |                  |
|---------------------|------------------|
| a. Loss of appetite | b. Weight gain   |
| c. Constipation     | d. Sleeplessness |

10. Which of the following organs is NOT a part of the female reproductive systems?

- |          |           |            |           |
|----------|-----------|------------|-----------|
| a. Ovary | b. Uterus | c. Urethra | d. Cervix |
|----------|-----------|------------|-----------|

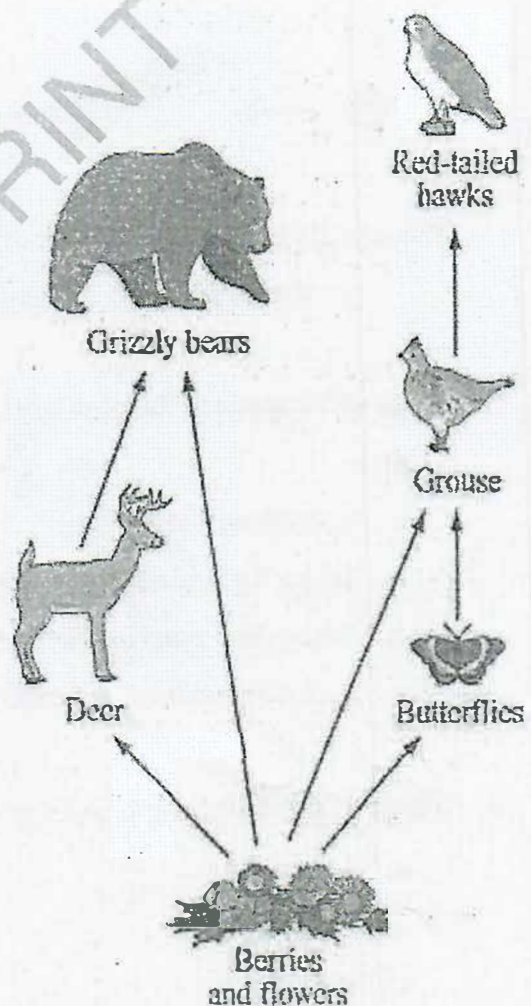
11. Which of the following is the female part of a flower?

- Pedice
- Anther
- Pistil
- Stamen

12. A partial food web is shown below aside.

Which of the following will most likely occur if the grouse population decreases?

- The butterfly population will increase.
- The red-tailed hawk population will increase.
- Emigration of grizzly bears and deer will increase.
- Competition between grizzly bears and deer will increase.





13. A scientist wants to artificially pollinate a flower. In what part of a typical flower would she or he find the pollen grains?
- Sepal
  - Carpel
  - Anther
  - Ovary
14. The simplest form of asexual reproduction that involves splitting of the parent cell to two daughter cells is:
- Binary fission
  - Multiple fission
  - Sperm formation
  - Budding
15. A student is preparing to run in a school track competition. For the quickest source of energy, the student should eat a food that contains a high percentage
- carbohydrates.
  - fat.
  - proteins.
  - sodium.
16. Which of the following observable characteristics is continuous variation?
- Human sex
  - Human blood group
  - Human body weight
  - Human tongue rollers and non-rollers.



17. If a heterozygous tall man married a homozygous short woman, the probability of a short baby that would be born is:

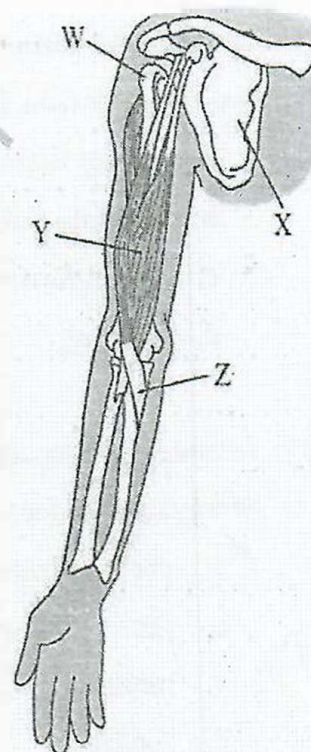
- a.  $\frac{1}{2}$       b.  $\frac{1}{4}$       c.  $\frac{3}{4}$       d.  $\frac{1}{3}$

18. The human body regularly sheds and replaces its skin cells. Which of the following processes is directly responsible for replacing these cells

- a. meiosis  
b. mitosis  
c. osmosis  
d. transcription

19. The diagram below shows a portion of the anatomy of the human arm. Which letter on the diagram indicates a tendon?

- a. W  
b. X  
c. Y  
d. Z



20. Which of the following describes the function of DNA?

- a. encoding genetic information  
b. storing energy in chemical bonds  
c. speeding up biochemical reactions  
d. destroying substances that enter the cell

**PART TWO: STRUCTURED QUESTIONS (60 Marks)**

**QUESTION ONE (6 Marks)**

1. Define the following terms [6]

a) ecology

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b) nerve impulse

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2. Describe the advantages of a reflex response in the survival of an organism. [6]

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3. State the principle of components of the DNA. [3].

i).....

ii).....

iii).....

4. Explain why pituitary gland is called master gland. [4]

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5. What is meant by the following terms? [6]

i. Fertilization

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ii. Pollution.

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6. How is population different from community? [6]

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7. If a female begins producing mature eggs at age 13 and continues uninterruptedly until the age of 48, about how many eggs will she have produced in her lifetime? [4]

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8. Distinguish between gene and mutation and chromosome and mutation. [6]

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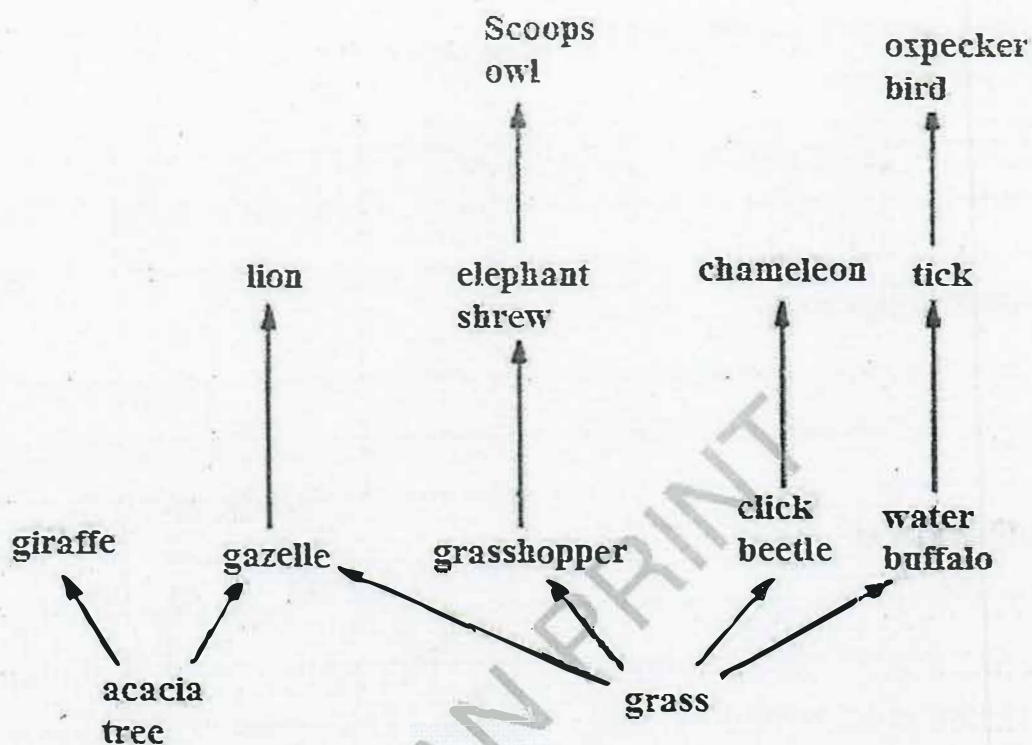
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9. The figure shows a food web which includes some organisms in the African grasslands. [13]



- (a) (i) In the space below draw a food chain consisting of **four** organisms. The organisms must be part of the food web. [2]

- (ii) Using examples from the food web, explain the difference between producers and consumers.

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..... [4]



(b) When weather conditions are favourable the grasshopper population can suddenly increase enormously.

Predict and explain the effect this might have on the

(i) Scops owl population;

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..... [2]

(ii) water buffalo population;

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.....  
..... [2]

(iii) giraffe population.

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..... [3]

10. Name the parts of the stamen and the pistil. [4]

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11. If a man's blood is AO married to a woman with blood group BO, what type of blood would their first four offsprings probably have? [4]

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END