

R&PUBL IC OF SOMALILAND

FORM FOUR EXAMS, 2016

BIOLOGY



NATIONAL EXAMINATION BOARD



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Total Score

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Name.....

School.....

Roll No.....

Republic of Somaliland

Somaliland National Examination Board



2015 - 2016

TIME 2 HOURS

Plus 10 minutes for reading through the paper

INSTRUCTIONS TO CANDIDATES

This paper consists of 15 printed pages

Count them now. Inform the invigilator if there are any missing or extra pages.

There are two parts:

PART 1:	Multiple Choice Questions	25 Marks
PART 2:	Structured Questions	75 Marks

TOTAL	100 Marks
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- Answer all questions.
- No extra paper is allowed

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

PART 1: Multiple choice questions. Circle the correct answer (25 Marks)

1. In microscope measurements, the usual size is micrometer (UM) which is equal to:
 - a) 1000 mm
 - b) 1/1000 mm
 - c) 10000 mm
 - d) 1/10000 mm
2. An atom has 6 electrons and 6 neutrons. It is electricity neutral, what is the mass number of this atom?
 - a) 6
 - b) 7
 - c) 12
 - d) 18
3. An energy requiring process by which molecules are moves through a cell membrane is called :
 - a) Active transport
 - b) Facilitated diffusion
 - c) Osmosis
 - d) Diffusion
4. Ribosome occur in
 - a) Only eukaryotic plan cells
 - b) All eukaryotic animal cells
 - c) All eukarysitic cells
 - d) Both prokaryotic and eukaryotic cells
5. The element is an integral part of an enzyme and is necessary for its activity . in this situation magnesium is a can
 - a) Cofactor
 - b) Coenzyme
 - c) Prosthetic group
 - d) Inhibitor

6. Higher plant most often absorb nitrogen from the soil in the form of :
- a) N_2
 - b) Nitrates
 - c) Ammonia
 - d) Nitrites
7. Organisms not expected to be in the benthic community in the aphotic zone are
- a) Green algae
 - b) Fish
 - c) Fungi
 - d) Heterotrophic protests
8. Aerobic respiration occurs
- a) Only in animals
 - b) Only in plant
 - c) In plants and animal.
 - d) Only under anaerobic conditions
9. In advance plants meiosis occurs in the
- a) Leaves
 - b) Root tip
 - c) Flowers
 - d) Stems
10. Bacteriophages are
- a) Prokaryotes
 - b) Bacteria
 - c) Viruses
 - d) Cells
11. _____ Is the transfer of pollen grains from the another of one plan to the stigma of another plant of the same species
- a) Self-pollination
 - b) Cross- pollination
 - c) Fertilization
 - d) Pollination

12. _____ is the association between two organisms of different species which benefit from each other:
- a) Parasitism
 - b) Saprophytism
 - c) Symbiosis
 - d) Predation
13. Which one of the following is the process by which organisms manufacture food substances from simple substances?
- a) Autotrophism
 - b) Heterotrophism
 - c) Maintenance
 - d) Nutrition
14. Which one of the following is fluid medium with dissolved and suspended substances
- a) Red blood cells
 - b) White blood cells
 - c) Plasma
 - d) Platelets
15. Which one of the following is the removal of undigested food from the alimentary canal through the anus?
- a) Secretion
 - b) Egestion
 - c) Ingestion
 - d) Digestion
16. Which of the following is the type of the cell division that results in two daughter cells each having a nucleus containing the same number and kind of chromosomes as the Mother cell?
- a) Cell division
 - b) Mitosis
 - c) Meiosis
 - d) Metaphase

17. The molecular formula for glucose is $C_6H_{12}O_6$ what would be the formula for a polymer of ten glucose units that have been linked by condensation reaction ?
- a) $C_6H_{12}O_6$
 - b) $C_{60}H_{100}O_{50}$
 - c) $C_{60}H_{102}O_{51}$
 - d) $C_{60}H_{111}O_{51}$
18. Which of the following types of molecules are the major structural component of the cell membrane?
- A) Phospholipids and cellulose
 - B) Nucleic acids and protein
 - C) Phospholipids and protein
 - D) Proteins and cellulose
19. Which of the following is a unit of heredity composed of deoxyribonucleic acid (DNA) material on the chromosome.?
- a) RNA
 - b) gene
 - c) allele
 - d) Genotype
20. Which of the following is the storage form of glucose by plants?
- a) Starch
 - b) Protein
 - c) Lipids
 - d) Glucose
21. A plant cell becomes turgid due to
- a) Plasmolysis
 - b) Exosmosis
 - c) Endosmosis
 - d) Electrolysis
22. Which of the following human cells do not contain mitochondria?
- a) Nerve cells
 - b) Red blood cells
 - c) Liver cell
 - d) White blood cells

23. Which of the following is polysaccharide?

- a) Glycogen
- b) Sucrose
- c) Lactose
- d) Maltose

24. Cardiac muscles are

- a) Striated and voluntary
- b) Striated and involuntary
- c) Smooth and voluntary
- d) Smooth and involuntary

25. Longest phase of meiosis

- a) Prophase -- I
- b) Prophase -- II
- c) Prophase -- I
- d) Prophase -- II

PART 2: 08 STRUCTURED QUESTIONS:

(75 Marks)

1. Diagram shown below represents a part of the nephron . Use it to answer the questions that follow:



- a) i) Name the parts labelled A,B,C and D .

(4 Marks)

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- ii) Name the fluids found in C and D

(2 Marks)

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- iii) Name the process by which the fluid in D is formed

(2 Marks)

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- iv) Give two differences in the composition of the fluids in C and D?

(2 Marks)

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- b) What eventually happens to the fluid in D ?

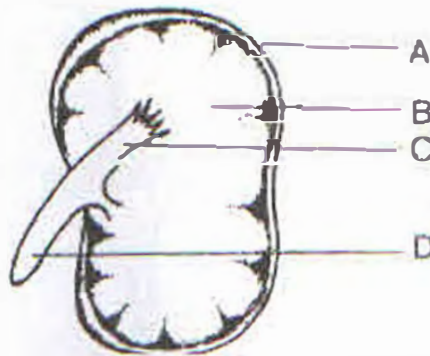
(2 Marks)

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2. The diagram below show a section of a broad been seed



a) Name the parts labelled A to D. (2Marks)

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b) What is the function of each of the part labelled A and B? (2Marks)

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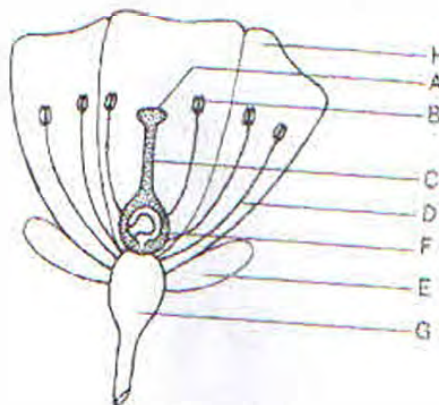
c) It has been observed that the radical develops first during germination.
Explain the importance of this (3Marks)

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3. The diagram below shows a longitudinal section of a generalised flower



a) Name the parts labelled A-H

(4Marks)

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b) Where on the diagram does each of the following take place?

i) Production of pollen grains

(1mark)

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ii) Fertilization

(1Mark)

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c) State the role played by A,D, C, and H.

(4Marks)

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d) List visible features in this flower that would be absent or different in a mature grass flower?

(2Marks)

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e) Name the agent of pollination for the above flower with two reasons. (2marks)

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4. a) Name vitamins an enzyme and a mineral element that are involved in the blood clotting process. (3marks)

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b) Give reason why knowledge about human blood group is important during transfusion. (2Marks)

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c) State two ways by which white blood cells fight micro-organisms. (2Marks)

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d) Name the diseases of blood described by the following symptoms:

i)Inability of the blood to clot (2Marks)

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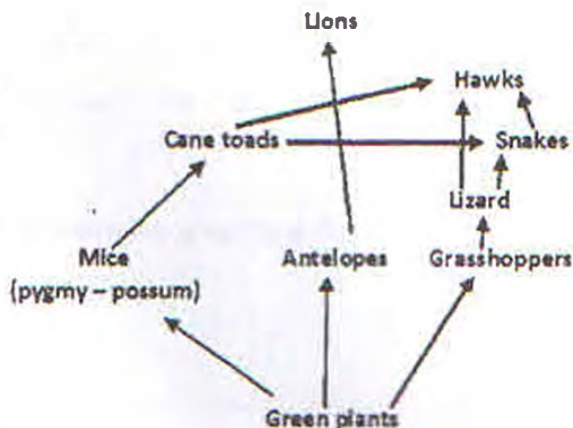
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ii) Crescent-shaped red blood cells with abnormal haemoglobin (2 Marks)

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5. The diagram shown below represents a food web in a terrestrial ecosystem



a) From the food web, construct a food chain with five organisms

(2Marks)

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b) State the trophic level occupied by :

i) Hawks.

(2Marks)

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ii) Cane toads.

(2Marks)

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c) What would happen if leopards were introduced into the ecosystem?

(3Marks)

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6. Name the response shown by each of the following groups of organisms:

- a) Curvation of plant shoot tips towards the direction of incoming light (1Mark)

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- b) Root hairs of bean plants growing towards regions with high content of inorganic fertilizer in the soil. (1Mark)

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- c) Euglena and volvox moving towards regions of maximum light intensity in water. (1Mark)

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- d) Termites hiding from direct sunlight. (1Mark)

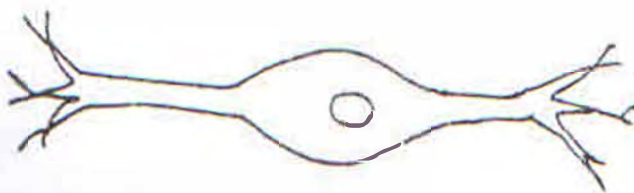
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7. a) Identify the type of neurone shown below diagram (1Mark)

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- b) State the functions of the neurone identified in (a) above (1Mark)

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c) Distinguish between a nerve and a nerve cell

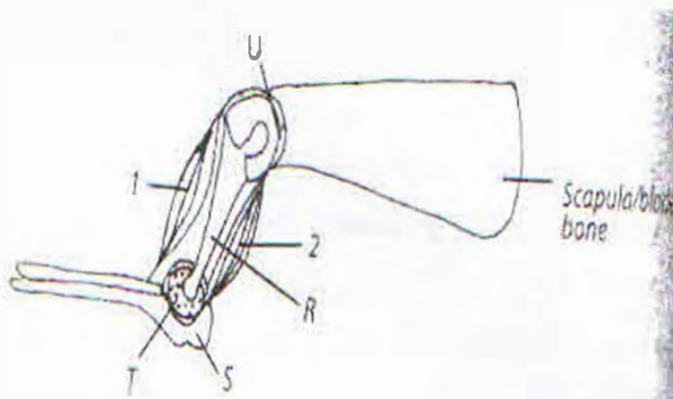
(2Marks)

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8. The diagram below represents two of the joints in the mammalian body



a) Name the parts of the Skeleton labelled R, S, T and U.

(4Marks)

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b) i) Name the type of joint formed at the anterior and posterior ends of the bone labelled R

(2Marks)

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ii) State the functions of parts labelled T and U.

(2Marks)

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c) With a reason, identify bone U.

(2Marks)

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d) Identify muscles 1 and 2

(2Marks)

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e) Explain how the muscles shown in the above figure work to bring about

(2marks)

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END

c) With a reason, identify bone U.

(2Marks)

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d) Identify muscles 1 and 2

(2Marks)

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e) Explain how the muscles shown in the above figure work to bring about

(2marks)

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END