**231/3**

**BIOLOGY**

**Paper 3**

**(Practical) Marking scheme**

**June 2014**

**1 ½ hours**

**KAHUHO UHURU HIGH SCHOOL**

**Mid Term Examination 2014 Form Three**

**INSTRUCTIONS**

This paper has ONE section ONLY

Answer **ALL** the questions in this paper

All answers should be written in the spaces provided on the question paper.

**Questions (50 marks)**

1. You are provided with solutions labeled S, reagents Benedicts, Iodine, Hcl, NaHCO3, DCPIP solutions.
2. Using solution S and reagents provided, carry out a food test and record the observation and conclusions in the table below. (9 marks)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Procedure | Observation | Conclusion |
| Iodine Test | *Put 2ml of solution S in a test tube, add iodine solution and shake. Record your observation* | *The colour of iodine is retained/No noticeable colour change* | *Starch absent* |
| Non Reducing Sugar | *Put 2ml of solution S in a test tube, add a few drops of Hydrochloric acid and heat gently.Cool over running tap water, add a few drops of sodium hydrogen carbonate untill fizzing stops, add an equal amt of benedicts’ solution and heat gently Record your observation* | *The solution retains the colour of benedicts solution/No noticeable colour change* | *Non reducing sugars are absent* |
| DCPIP Test | *Put 2ml of solution* ***DCPIP solution in a test tube, add an equal amount of Solution S*** *as you shake. Record your observation* | *The Solution S contained in the test tube is decolourised* | *Ascorbic acid/Vitamin C present* |

**NB: Reject if symbols only are used, order must be correct, Benedicts’ (with apostrophe), If procedure is**

**wrong, reject observation and conclusion**

1. Identify the functions of the food you tested under the following as utilized by human beings (2marks)

DCPIP*Vitamin C’s necessary for healing wounds, in addition to mending and preservation of bones, cartilage, as well as teeth*.

Non Reducing Sugar *It is hydrolyzed to provide energy*

**b)** What is the significance of using the following reagents while testing for the above food tests (2 marks)

i) Hydrochloric acid

*Hydrolyses/ breaks down the non reducing sugar to a reducing sugar*

ii) Sodium Hydrogen carbonate solution

*It neutralizes the Hydrochloric acid that was used earlier during hydrolysis*

(c) Name two areas in the human body where the food tested with iodine in the table above is digested. (2marks)

*-Mouth*

*-Duodenum*

1. The diagram below was taken from a unit of an organ in the human body.
2. Identify the structure…*Kidney Nephron* (1 mark)

b

e

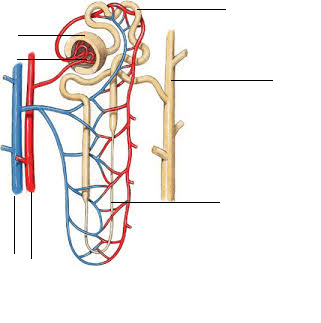
f

a

d

c

g



1. Identify the parts labeled (6 marks)

*a…Bowmans’ capsule*

*b…Proximal convulated tubule*

*c…Collecting duct/tubule*

*d…Ascending loop of henle*

*e…Renal Vein*

*f…Renal artery*

1. State the function of the part labelled g and b (2 marks)

*g…Ultrafiltration; Separation of small blood molecules from large ones*

*b…Reabsoption of important substances such as glucose*

1. Explain the role of the part labeled g in osmoregulation (2 marks)

*During ultrafiltration, Large molecules such as blood cells are separated from small molecules which eventually form glomerular filtrate; This filtrate have excess water and mineral ions which are later excreted to balance the body’s osmotic pressure*

1. The part labelled d in desert animals is longer than that of animals in aquatic areas. Explain this with reference to osmoregulation (2 marks)

*In desert animals, the loop of henle is long to increase the surface area for reabsorption of water;*

*aquatic animals do not require water conservation.*

1. Identify 3 contents that enter part labelled g but are not found in part labelled b (3 marks)

*-Blood cells*

*-Dissolved proteins*

*-Amino acids*

3.The photographs below were as samples from the Kenya wildlife service. Use them to answer the questions that follow.







U V W







X Y Z

a) Name the classes to which photographs labeled U,V, X and Z belong (3 marks)

*U…Amphibia*

*V…Mammalia*

*X…Aves*

*Z…Diplopoda*

1. Among the photographs, Identify; ( 3 marks)

*Predator…V,U*

*Prey…… U, Y, Z*

*Scavenger…W*

1. From observable features only, state one adaptation each that enables the following organisms to survive in their habitats ( 4marks)

*U…Camouflage/Colour blends with the background*

*V… Camouflage; Presence of Canine teeth for tearing fleshy*

*Y…Streamlined body for fast movement; Camouflage; good eyesight*

*Z…Mimicry/ pretends to be dead to escape predation*

1. State two effects that water pollution will have to the animal labeled X (2marks)

*-Oil clogs the wings preventing movement/flight*

*-Oil interferes with gaseous exchange*

*-Heavy metals accumulate to high levels leading to respiratory diseases*

1. Starting with grass, construct a food chain that involves organisms V,W and Y (Use letters only)(4 marks)

√ √ √

*Grass Y V W ( The arrow points to eater)*

*( Correct order 1mk)-√*

1. What would be the effect of the following to the food chain you constructed? (2 marks)
2. prolonged drought

*Leads to decrease in primary consumers(Y) and consequently secondary(V) and tertiary consumers(W)*

1. Removal of Y

*Leads to increase in primary producers/grass, decrease in secondary and tertiary consumers (V and W)*

1. i) Photograph Z indicates a type of a defensive behaviour, Name the type of behaviour (1 mark)

*Mimicry*

The end