**NAME.......................................................................INDEX NO..............................**

**SCHOOL.......................................................................... DATE.............................**

 **SIGN.............................................**

231/3

Biology paper 3

(Practical)

1 ¾ HRS

July/August 2019.

***Kenya Certificate of Secondary Education 2019***

231/3

Biology paper 3

(Practical)

TIME: 1 ¾ HRS

July/August 2019.

**INSTRUCTIONS TO CANDIDATES**

* Write your name and index number in the spaces provided at the top of this page.
* Answer all the questions in the spaces provided.

**For examiner’s use only**

|  |  |  |
| --- | --- | --- |
| **Question** | **Maximum score** | **Candidate’s score** |
| 1 | 13 |  |
| 2 | 15 |  |
| 3 | 12 |  |
| **Total score** | **40** |  |

**MARKING SCHEME**

1. You are provided with powder Q and powder R. Measure 10ml of distilled water and put it in a boiling tube. Put powder Q in the boiling tube, shake and make a solution. Label it solution Q. Measure 10ml of distilled water and put it in another boiling tube. Put powder R in the boiling tube, shake and make a solution. Label it solution R.
2. Using the reagents provided carryout food tests on the two solutions to determine the food present in the two solutions. ( 8mks)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Solution** | **Food** | **Procedure** | **Observation** | **Conclusion** |
| **Q** | Starch; | To about 2mk of solution Q, add 3 drops of iodine and shake | Blue black; | Starch present; |
| Protein; | To about 2ml of solution Q,add few drops of NaOH solution followed by afew drops of 1% copper (II) sulphate solution. | Colour changes to purple | Proteins present; |
| **R** | Starch; | To about 2mk of solution R, add 3 drops of iodine and shake | Blue black; | Starch present; |
| Protein; | To about 2ml of solution R,add few drops of NaOH solution followed by afew drops of 1% copper (II) sulphate solution. | RETAINS THE BLUE COLOUR OF COPPER (ii) SULPHATE; | Proteins absent; |

b (i). Which of the two food substances should be included in a diet to protect a child suffering from kwashiorkor? (1mk)

Powder Q

ii). Give a reason for your answer in b (i) above. (1mk)

It contains proteins;

C (i) name two enzymes in the human body which digest the food substances found in powder. (2mks)

Salivary amylase/pancreatic amylase;

Pepsin/trypsin;

ii) State the organ from which each enzyme you have stated in c (i) acts. (2mks)

 Salivary amylase – mouth / Pancreatic amylase – ileum;

 Pepsin – stomach / Trypsin – ileum;

1. Observe the three photographs carefully and answer the questions that follow



1. Identify the structures labeled H, J, and K (3mks)

**H stem;**

**J root nodule;**

**K tap root;**

1. Suggest the group of plant from which the root is obtained (1mk)

**Legume;**

1. Explain the relationship found at point J (4mks)

**Symbiosis; Rhizobium bacteria fix nitrogen to nitrates; which are used by the legume to make plant protein; the legume shares manufactured food with Rhizobium;**

1. Explain how the relationship benefits a farmer. (2mks)

**The nitrates formed reduce the need for the farmer to use fertilizers; hence saves;**

1. State one difference between the relationships in photographs D and F. (1mk)

**In D the preditor kills prey for food while the parasite does not kill the host;**

1. Construct one food chain from the organisms in photograph D (1mk)



1. State two disadvantages of the relationship shown in photograph F (2mks )

**The host loses nutrients;**

**The parasite can transmit diseases;**

1. The photographs below show a certain physiological process.



**A**

**B**

**Z**

**X**

**Y**

1. Name the physiological process shown by the photographs. (1Mark)

Gaseous exchange;

1. Name cells X and Y. (2Marks)

X guard cell;

Y epidermal cell;

1. How is cell X adapted to function? (2Marks)

Thick inner walls and thin outer wall that strtch differently opening the stomata;

Has chloroplast that photosynthesize making sugar which is necessary for opening and closing of stomata;

1. i) Name **two** substances that passes through part Z. (2Marks)

Water vapour;

Oxygen;

Carbon (IV) oxide; (any two)

ii) Describe the significance of the process shown by figure A. (2Marks)

Gaseous exchange;

Transpiration;

1. State three theories that explain the appearance of figure A and B. (3Marks)

Photosynthetic theory;

Starch sugar interconversion theory;

Potassium ion theory;