**MARKING SCHEME**

**BIOLOGY PRACTICAL MARKING SCHEME**

1. You are provided with the following materials;

***Substance labelled L***

***2cm3 Copper sulphate solution***

***2cm3Sodium hydroxide solution***

***2cm3 DCPIP solution***

***2cm3 Benedict’s solution***

***Source of heat***

***3 test tubes***

***3 droppers***

You are provided with a substance labeled **L**. Make a solution of substance **L** by adding 20 ml of distilled water and stir thoroughly. Design an experiment to investigate the food materials present in L (9mks)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Substance | Chemical test | Procedure | Observations | Conclusion |
| **L** | *DCPIP*  ***Reject Vitamin C plus subsequent steps*** | Put 1cm3 of DCPIP into a test tube.  Add solution **L** dropwise; | Colour of DCPIP disappears/purple;  **Reject DCPIP decolourised** | ***DCPIP*** *present;* |
| **L** | *Benedict’s*  ***Reject Reducing sugars plus subsequent*** | Put 1cm3 of solution **L** into a test tube  Add 1cm3 of Benedict’s solution  Boil ; | Green ; | **Traces /little** reducing sugars present;  ***Reject Reducing sugars alone*** |
| **L** | Biuret’s  ***Reject Proteins plus subsequent*** | Put 1cm3 of solution **L** into a test tube  Add 1cm3 of Sodium Hydroxide solution  Add 1cm3 of Copper Sulphate solution; | (Light) purple; | Proteins present; |

1. State the importance of the food substances present in **L** to the human body. (2mks)

**(a)Tied to the table**

**Proteins –used in formation of body tissues/enzymes/hormones**

**Glucose –oxidised by cells to release energy**

**Vitamin C-protection against diseases mark any 2**

1. Describe how the body deals with the substances mentioned in (a) above when they are in excess. (2mks)

**Proteins –excess amino acids deaminated**

**Glucose –converted to glycogen and stored in liver cells**

**Vitamin C-excreted (as oxalates) mark any 2**

**2.** Study the photographs below and answer the questions that follow.





1. (i) Identify the type of response exhibited by specimen **A** (1mk)

**Haptonasty**

(ii)What is the survival value of the response you have identified in (a)(i) above (1mk)

**A way of obtaining some limited mineral nutrients**

1. (i) Identify the phenomenon exhibited by specimen **B** (1mk)

**Etiolation**

(ii) State the significance of the phenomenon in (b) (i) above (1mk)

**To reach/search/seek/obtain light**

1. Explain how the response exhibited by seedlings in photograph **C** occurred (3mks)

**Seedlings subjected to unilateral/ unidirectional source of light ;causing auxins to migrate / diffuse to the dark side of the shoot;/ high concentration of auxins on dark side causing faster growth; on that side than the lit side/ faster cell elongation/ faster cell enlargement/ faster cell growth on the side than the lit.**

1. Study the photograph below showing a certain trait in man.



1. Identify the trait exhibited in the photograph above (1mk)

**Hairy pinna**

1. The trait you have identified in (d)(i) above is **sex linked**. In which chromosome is it contained (1mk)

**Y**

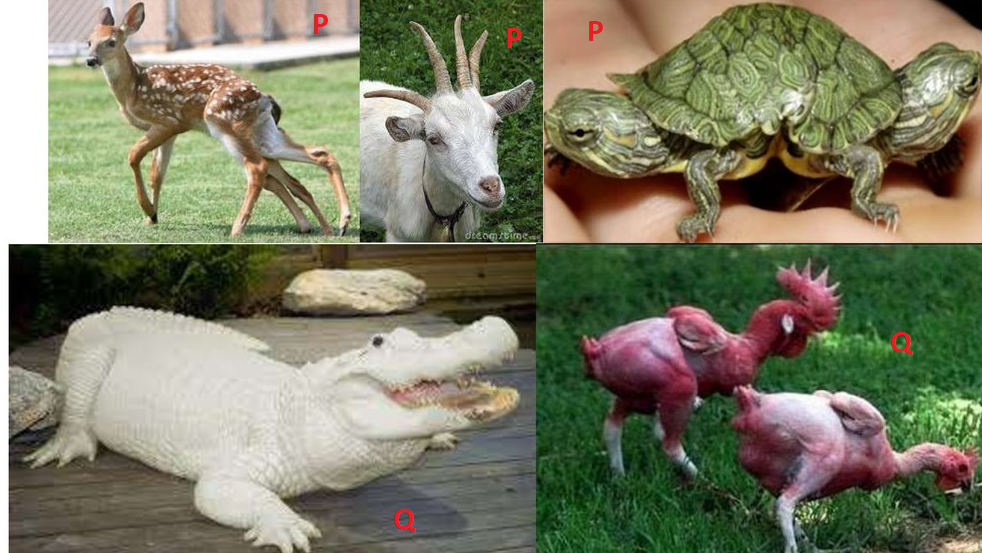
1. Name any other sex linked trait in man (1mk)

**Premature baldness**

**Colourblindness**

**Haemophilia**

1. The man in the photograph married a woman. Use a genetic cross to predict the offspring of the above marriage. Let **YH** represent the gene for the trait above. (4mks)
2. The photographs below show certain chromosomal mutations.



1. Identify them

**P** **Duplication**

**Q** **Deletion**

**3**. Study the photographs below and answer the questions that follow.



1. Give **two visible** survival adaptive features for the organism in photograph **X**  (2mks)

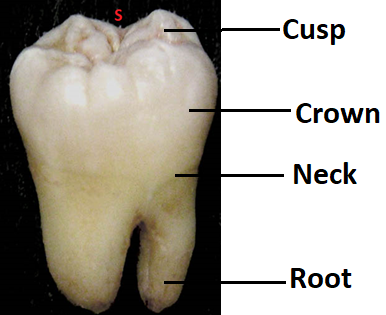
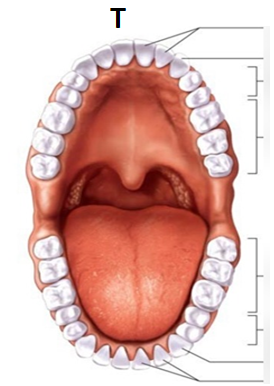
* **Presence of ( large/long/curved) sharp/sharp pointed canine for piercing ;**
* **Camouflage/blend well with environment concealing/hiding themselves from their predators/prey ;**
* **Presence of fur to insulate against the low temperature**

1. Identify the dentitions exhibited in photograph **Y** and **Z**  (2mks)

**Y** **Heterodont**

**Z** **Homodont**

1. Study the photographs below showing a certain type of tooth and teeth arrangement in man.

1. Label any **three** parts of the tooth in photograph  **S**  (3mks)
2. Give **two** observable adaptations of the tooth to its function (2mks)

* **Broad surface to increase surface area for chewing**
* **Cusps /ridges to increase surface area for chewing**

1. Write the **dental formula** for the teeth arrangement in photograph **T** (1mk)

**2 1 2 3**

**i — c - pm — m -**

**2 1 2 3**

**Reject**

* **If Commas and capital letters are used in the dental formula**
* **If Divisional line is missing in the dental formula**

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