# KAPSABET HIGH SCHOOL

# 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*** | 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; |

(a) 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**

(b) 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.




(a) (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**

(b) (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**

(c) 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.**

(d) Study the photograph below showing a certain trait in man.

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

**Hairy pinna**

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

**Y**

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

**Premature baldness**

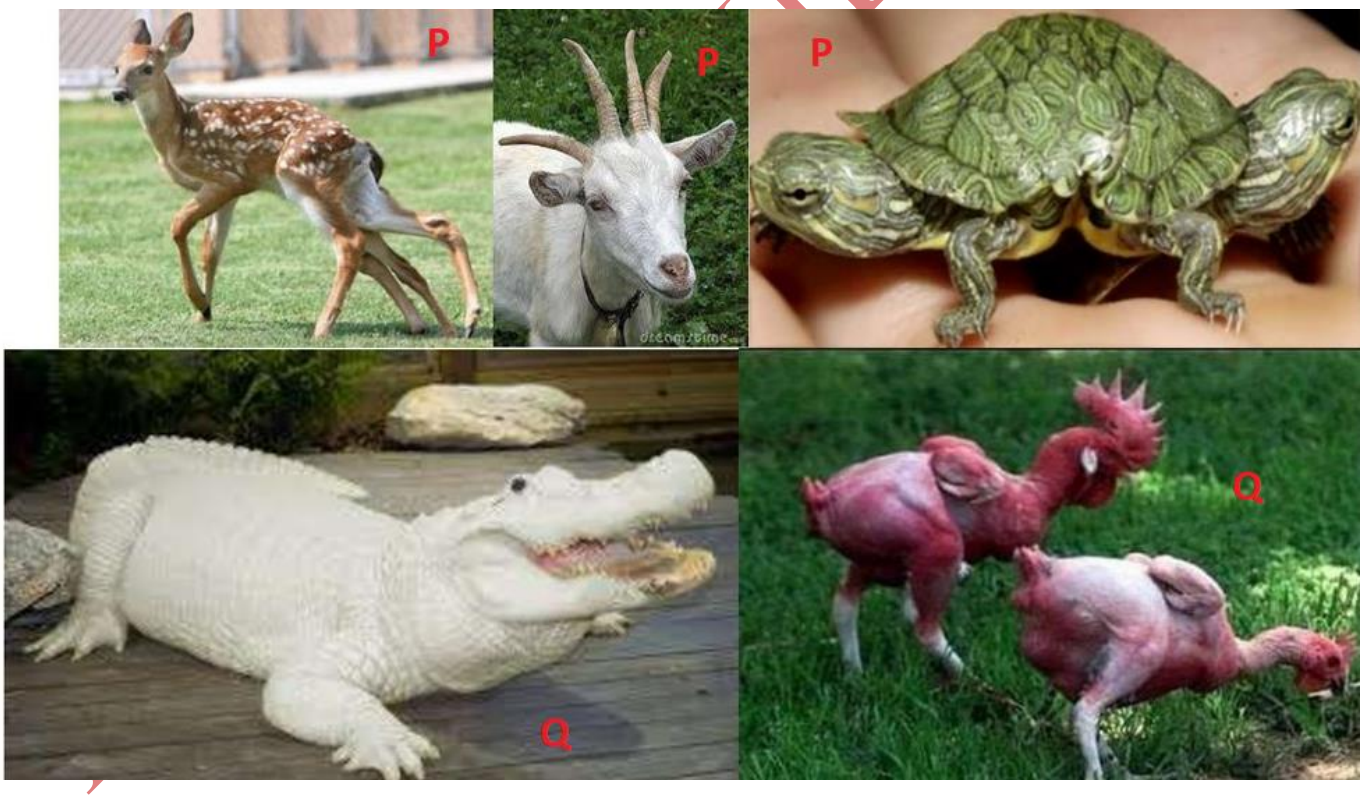
**Colourblindness**

**Haemophilia**

(iv) The man in the photograph married a woman. Use a genetic cross to predict the offspring of the above marriage. Let $\mathbf{Y^H}$ represent the gene for the trait above. (4mks)



(e) The photographs below show certain chromosomal mutations.

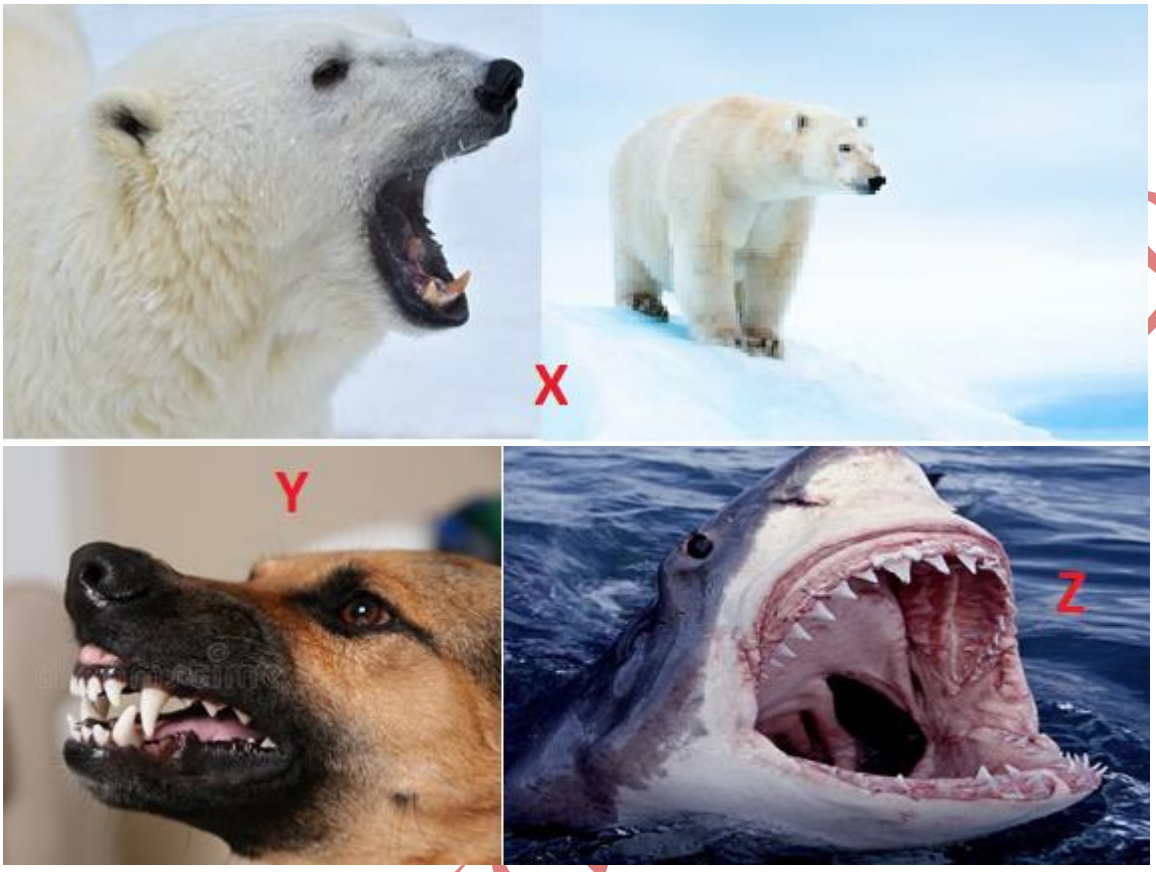



(i) Identify them

**P** **Duplication**

**Q** **Deletion**

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




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

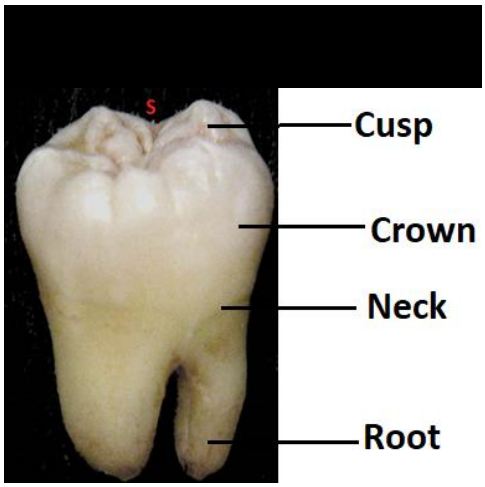
- **Presence of ( large/long/curved) sharp/sharp pointed canine for piercing ;**
- **Camouflage/blend well with environment concealing/hiding themselves from their predators/prey ;**
- **Presence of fur to insulate against the low temperature**

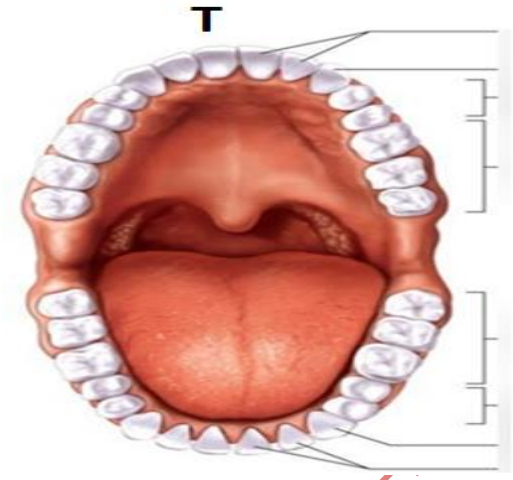
(b) Identify the dentitions exhibited in photograph **Y** and **Z** (2mks)

**Y** **Heterodont**

**Z** **Homodont**

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




(i) Label any **three** parts of the tooth in photograph **S** (3mks)

(ii) 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**

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

$$\frac{2\ 1\ 2\ 3}{2\ 1\ 2\ 3}\ i - c - pm - m -$$

**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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