

BIOLOGY PRACTICAL MARKING SCHEME

1. You are provided with the following materials;

Substance labelled L

2cm³ Copper sulphate solution

2cm³ Sodium 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 1cm ³ 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 1cm ³ of solution L into a test tube Add 1cm ³ of Benedict's solution Boil ;	Green ;	Traces /little reducing sugars present; Reject Reducing sugars alone
L	Biuret's Reject Proteins plus subsequent	Put 1cm ³ of solution L into a test tube Add 1cm ³ of Sodium Hydroxide solution Add 1cm ³ 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 acid; deaminated

Glucose –converted to glycogen and stored in liver cell;

Vitamin C-excreted (as oxalate) 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)

Seedling; 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 Y^H represent the gene for the trait above. (4mks)

(e) The photographs below show certain chromosomal mutations.

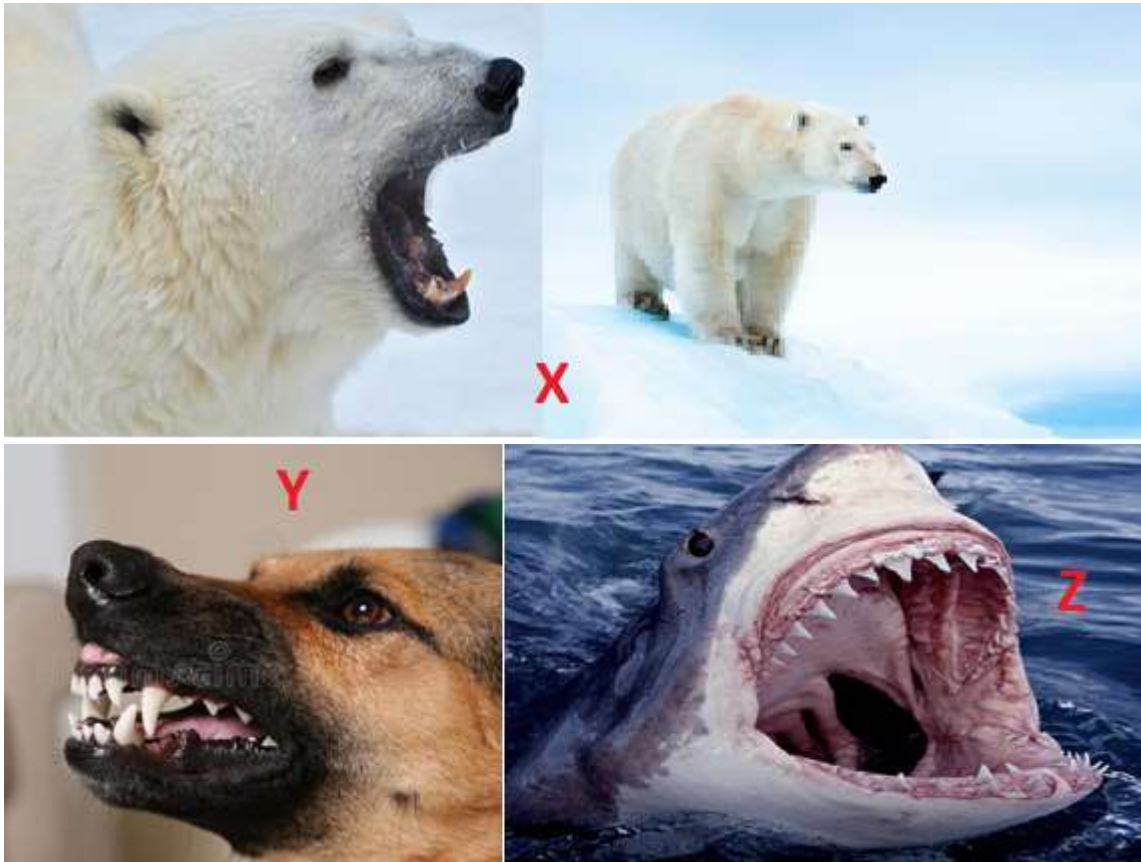


(i) Identify them

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)

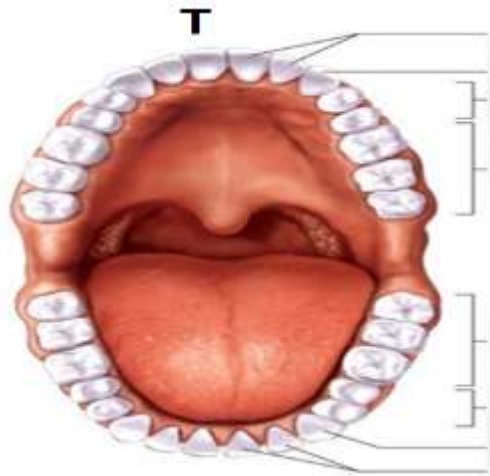
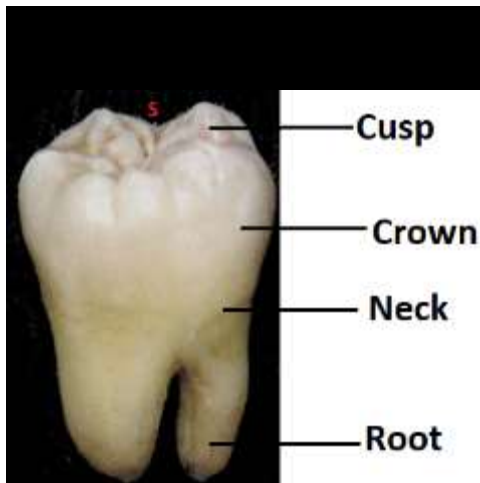
- ❖ **Presence of (large/long/curved) sharp/sharp pointed canine for piercing ;**
- ❖ **Camouflage/blend well with environment concealing/hiding themselves from their predators/prey ;**
- ❖ **Presence of fur to insulate against the low temperature**

(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)

2 1 2 3
i - c - pm - m -
2 1 2 3

Reject

- **If Comma; and capital letter; are used in the dental formula**
- **If Divisional line is missing in the dental formula**

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