**231/2**

**BIOLOGY.**

**PAPER 2**

**MARKING SCHEME.**

**SECTION A.**

1 a) - To measure the rate of transpiration by weight loss / to show that water is lost

during transpiration; (1mark.)

b) - The tube contain the leafy shoot losses more weight / water faster rate than the

shoot without leaves; (1mark)

c) - The leafy shoot has a large a surface area / more stomata than that without leaves;

so more water is lost; (2marks)

d) - To prevent water from the tubes form evaporating; (1mark)

e) - Temperature; Humidity; Air movement / wind; atmospheric pressure; supply /

availability of water; (max 2marks)

f) - Cooling of the plant;

distribution / transport of mineral ions;

Any one (1 mark.)

2 a) - Hearing / detection of sound;

Body balance / posture; (2marks.)

b) (i) C- Ear canal / External auditory meetas;

(ii) G- Semi – Circular canals;

(iii) F- Auditory nerve; (3marks)

c) (i) Equalise air pressure between middle ear and outer ear / prevent

damage of ear drum; (1mark)

(ii) Cochlea/ E; (1mark)

d) - Ear ossicles / D; (1mark)

3 a) - A diet that contains all types / classes of food; in the right proportions/ quantities; 2marks.

b) - Occupation / activity ; Basal metabolic rate; age; sex ; Body size / weight; Health

condition Mark any 2 (2marks)

c) - Carnivorous; ref. carnival; flesh eater;

d) - Pepsinogen / pepsin / rennin;

- HCL / hydrochloric acid; ref. acid;

- Mucus; (3marks)

4 a) - M-nerve endings;

- P- subcutaneous layer ? adipose tissue;

- Q- Hair;

b) - Secrete sebum which keeps the hair / skin flexible / sapple / soft / waterproof;

Antiseptic; Any (1mark)

c) - Protection against mechanical damage / entry of bacteria / micro- organisms /

reduces loss of water;

d) - J- muscles relax; (1mark)

- N- becomes active / increases production of sweat; (1mark)

e) - Hypothalamus; (1mark.)

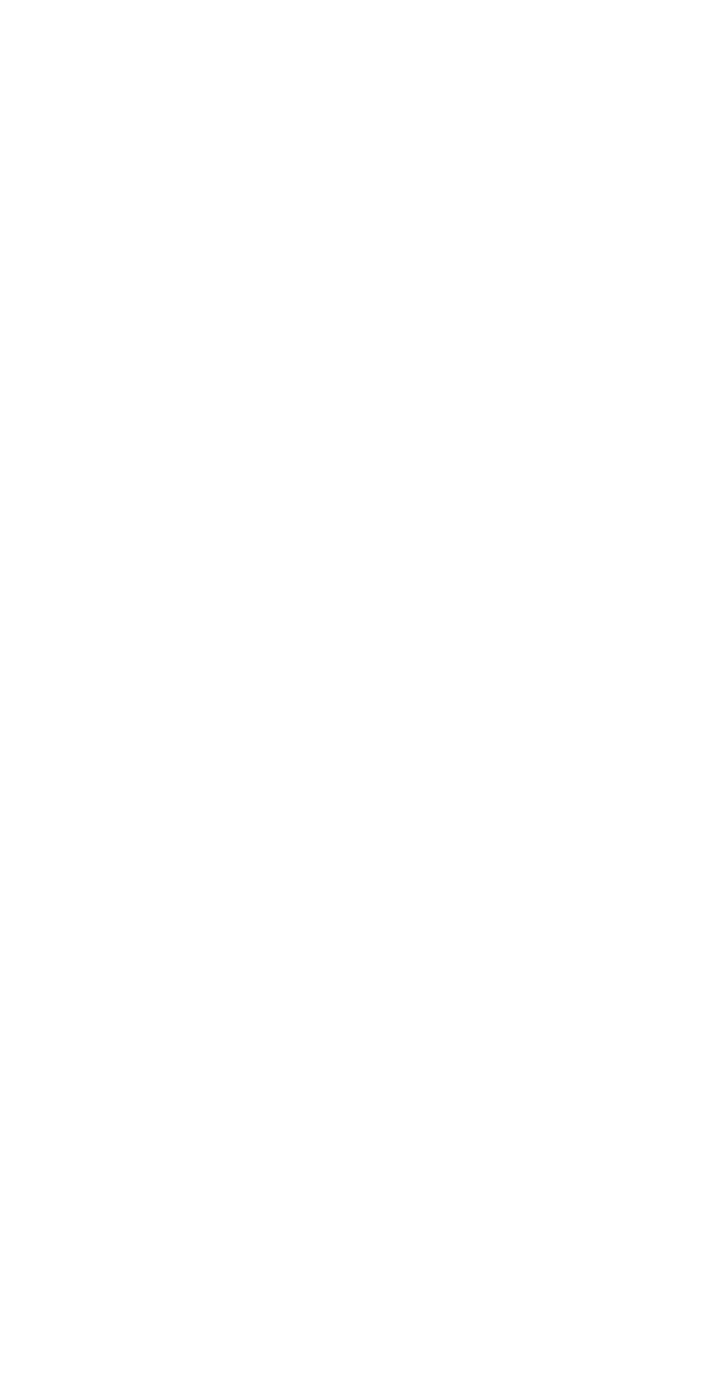
5 a) (i) Purple flower colour; (1mark)

(ii) The cross produce Higher / ¾ purple flowered plants / only ¼ fewer white

flowered plants; (1mark)

b) - P.Phenotypes: purple flowered X purple flowered

plant plant



- P.genotypes: Ff Ff;

- Gametes: 

Fertization / F1 / progeny/ offsprings;

|  |  |  |
| --- | --- | --- |
|  | F | f |
| F | FF | Ff |
| f | fF | ff |

Fussion ¾ purple: ¼ white;   
 Max (3 Marks)

c) - 50 % purple: 50% white

OR ½ purple : ½ white

OR 1 purple : 1 white 1mark.

1. (i) Sickle cell trait / haemoglobin **S** carriers have some immunity to malaria / plasmodia;

(ii) Is a change in the chemical structure of the gare/ DNA; (1mark.)

6 a) graph

b) To show that energy / heat is produced by germinating seeds;

c) (i) Day 0-5:

R-Increase in temperature /significants increase in temperature; stored food is

broken down by enzymes during germination producing heat; (2mark)

T- no increase / No significant increase in temperature; boiling denatures

enzymes/ kills seed hence no germination / respiration. 2marks max(3marks.)

1. Decrease in temperature in R; significant increaser in temperature in T; (2marks.)

Stored food exhausted hence decline in enzymatic reaction in R; while in T bacteria / fungi act on the food / decomposition producing energy;(Max 4marks)

d) (i) Boiling kills seeds / de nature enzymes hence no respiration / germination;

antiseptic kill bacteria / provide unfavourabl;e conditions for bacterial growth;

(2marks.)

(ii) Control; (1mark.)

e) - Impermeable / hard testa;

- Immature embryo;

- Presence of growth inhibitors;

- Absence of growth promoters / auxins;

- Seed dehydrated / lack water / dry; ***Mark any two (2marks)***

7 a) - Bone narrows; Lymphnodes; spleen;

b) - Red blood cells; transport oxygen from the lungs body tissues; as

oxyhaemoglobin; CO2 as bicarbonate ions; form body tissues to the lungs;

Blood plasma; transport dissolved food nutrients/ glucose / aminoacids / fatty

acids and glycerol; from small intestines to the liver; to other body tissues; Carbon (iv) Oxide to lungs; urea from liver to

kidneys; distribute heat in the body;

White blood cells; engulf and digest pathogens/ bacteria; produce antbodies /

anttoxins; to neutralize / destroy bacteria / toxins;

Blood platelets; cause clotting of wounds; prevent entry of bactena / pattogens;

prevent loss of blood / water / mineral ions / nutrients;

Total 20 max 17marks.

8 a) - Similarities between Endocrine and Nervous systems.

* Both provides means of co-ordination within the body of the animal / survival responses;
* Both involve transmission of a message, stimulus and response;
* Target organs of hormones are like effectors organs for impulses;
* Both involve chemical transmission; (4marks.)
* Differences.
* **Endocrine** **Nervous**

|  |  |
| --- | --- |
| Chemical substance hormone to evolve response | Electrical / nerve impulse evolve |
| Message / hormone transmitted through blood. | Message/ nerve impulse transmitted through nerves / nerve fibres; |
| Slow response | Quick response; |
| Effect widespread | Effect localized; |
| Effects long lasting / involve growth | Effect rapid acid short lived; |

***5mark***

***Total 9marks***

***Max 8 marks.***

b) - Pain receptors; in the skin; are stimulated generate impulse; transmitted through

sensory neurone; then across a synapse; to the relay neurone; in grey matter /

spinal cord; though another synapse; to a motor neurone; to the flexer muscles;

which contracts; to cause the jumping; ***Max (12 marks)***