**BIOLOGY PAPER 2 FORM 3 MARKING SCHEME**

1.

|  |  |
| --- | --- |
| Natural | Acquired |
| Inherited/transmitted from the parent to the offspring; | Developed after suffering from a disease/through vaccination |

b) Allergy-Drastic reaction of the body seen in a few individuals towards foreign substances that are normally harmless to the rest population/hypersensitive reaction of the body to the harmless substances;

c) i) Platelets/Thrombocytes;

ii) Fibrin clot; reject clot alone

d) i) High temperature in the atmosphere causes temperature of the leaf to rise; thus increasing

the vapour pressure in the intercellular air spaces this causes increase in transpiration rate;

1. Low humidity in the atmosphere/dry air results to high vapour in the intercellular air space than the air surrounding the leaf; hence increase diffusion gradient hence higher transpiration rate
2. Low atmospheric pressure causes an increase in evaporation from a wet surface/less opposing to evaporating molecules thus higher rate of transpiration;

2.(a) Osmosis; (1 mark)

(b) Solution Y is hypertonic/ high concentrations; water moved from cell to solution (2marks)

(Y);

Cell became flaccid/ shrinks; (1mark)

1. (i)



(ii) Cortex cells/ cortical cells absorbs water; expanding /curving away to the

 epidermis; epidermal cells are water proof; (3 marks)

3. )Approximate population = 

 i.e ; ✓

 =; ✓ 540 ants; ✓

 (b) Does not consider migration of organisms into and out of study area.

 - Does not consider the effect of paint used in marking on the animals behaviour

 - Released animals may not mix freely with the remaining population.

 - Marked organism may not have adequate time to mix with the rest.

 - Does not consider the effect of weather on the organisms behaviour (any 4)

 (c) - Quardrat method

 - Belt transect method

 - Line transect method X

4.

1. – Vacuole / Sap vacuole

 Y – Tonoplast;

 Z – Chloroplast; ***(3marks)***

1. Cellulose ***(1mark)***
2. Active transport ***(1mark)***
3. The cell sap is hypertonic to the solution / distilled water; hence water molecules move into the cell; by osmosis; making it to swell and eventually burst; ***(3marks)***

5.

1. Pneumatophores / Aerial breathing roots;
	* + - Stomata; ***(2marks)***

* 1. A – Gill rakers;

 B – Gill bar / arch;

C – Gill filaments; ***(3marks)***

(ii)Trap food / solid particles hence prevent them from clogging the gill filaments; ***(1marks)***

* + - Highly vascularised to transport away oxygen that has diffused in;
		- Thin epithelium to reduce the distance gases diffuse across;
		- Numerous to increase surface area for maximum absorption of oxygen.
		- Ability to spread singly when in water, further increasing the surface area. ***mark any 2; (2 marks)***

**Question 6**

* Label axis – 2mks
* Smooth curves labeled – 2mks
* scale – 1mk
* plots – 1mk
* A – 120 ± 1
* B- 140 ± 1
1. Person A is capable of regulating sugar while person B is likely to be diabetic
* In person A; insulin is released which stimulates the liver to convert excess glucose to glycogen in the liver.
* In person B; insulin is not released; thus the decline is due to glucose being released in urine.
1. ATP (Adonosine triphosphate)
* Body size
* Occupation
* Age
* Sex gender
* Environmental condition e.g temperature
* BMR
* State of the body viz ill; expectant mother;
1. Liver

 .7(a) - Highly vascularised/network of blood capillaries;

- Large surface area for gaseous exchange;

- Thin membrane/ epithelium/ one cell thick wall/ thin lining;

- Moist (lining); (4mks)

(b) Breathing in:

- External intercoastal muscles contract; internal intercoastal muscles relax;

lifting/raising the ribcage upwards and outwards; muscles of diaphragm contract; hence it flattens; the volume of the thoracic cavity/lungs increases; while the pressure decreases; higher air pressure in the atmosphere forces air into the lungs( through nose);

Breathing Out:

- External intercoastal muscles relax; while internal intercoastal muscles contract;

moving the rib cage downwards and inwards; the muscles of diaphragm assumes dome shape; the volume of thoracic cavity decreases; while pressure increases; High pressure forcing air out of the lungs(through nose); (l6mks)

**(20mks)**

8. (a) Digestion is the enzymatic breakdown of food; into products that can be absorbed; (2mks)

(b) - Bile contains bile salts (sodium taulocholate and sodium glycocholate); which emulsify fats thus increasing the surface area for the action of lipase;

- Bile also contains sodium bicarbonate; which neutralizes acid from the stomach;

- The sodium bicarbonate creates alkaline conditions necessary for the action of digestive enzymes in the duodenum and the small intestines; (5mks max4)

(c) - In the mouth, the protein is chewed by the action of the teeth and mixed with the

saliva for easy swallowing; (No digestion of protein occurs in the mouth)

- In the stomach, the gastric glands in the stomach wall secrete gastric juice;

- Gastric juice contains hydrochloric acid; pepsinogen and rennin;

- Hydrochloric acid activates pepsinogen into pepsin;

- HCL creates the acidic conditions necessary for pepsin to digest protein into polypeptides;

- Rennin hydrolyses the soluble milk protein/ Casein; into an insoluble curd; which is then digested by pepsin;

- in the duodenum, the acidic PH created by the HCL is neutralized by the sodium

bicarbonate; present in the pancreatic juice;

- This creates alkaline conditions required by the trypsin; to digest proteins into polypeptides;

- Trypsin is also secreted here in its inactive precursor trypsinogen;

- Trypsinogen is converted into trypsin by the enzyme enterokinase;

- In the small intestine / ileum alkaline conditions prevails;

- The wall of ileum secretes intestinal juice; which contains peptides;

- Peptides complete the digestion of protein breaking polypeptides into amino acids; **(l9mks max 14)**