

FORM THREE TERM ONE EXAM 2017

MARKING SCHEME BIOLOGY Paper 2

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BIOLOGY PAPER 2 FORM 3 MARKING SCHEME

1.

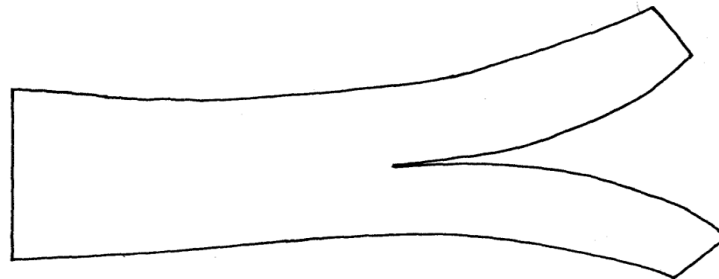
Natural	Acquired
Inherited/transmitted from the parent to the offspring;	Developed after suffering from a disease/through vaccination

- 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;
ii) 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
iii) 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)

(c) (i)



- (ii) Cortex cells/ cortical cells absorbs water; expanding /curving away to the epidermis; epidermal cells are water proof; (3 marks)

3.)Approximate population = $\frac{\text{No.of organism in first catch} \times \text{No.of organisms in second catch}}{\text{No.of marked organisms recaptured}}$

$$\text{i.e } P = \frac{FM \times SC}{MR}; \checkmark$$

$$= \frac{120 \times 90}{20}; \checkmark 540 \text{ ants}; \checkmark$$

- (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) - Quadrat method
- Belt transect method
- Line transect method x

4.

- (a) – Vacuole / Sap vacuole
 Y – Tonoplast;
 Z – Chloroplast; (3marks)
 (b) Cellulose (1mark)
 (c) Active transport (1mark)
 (d) 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)

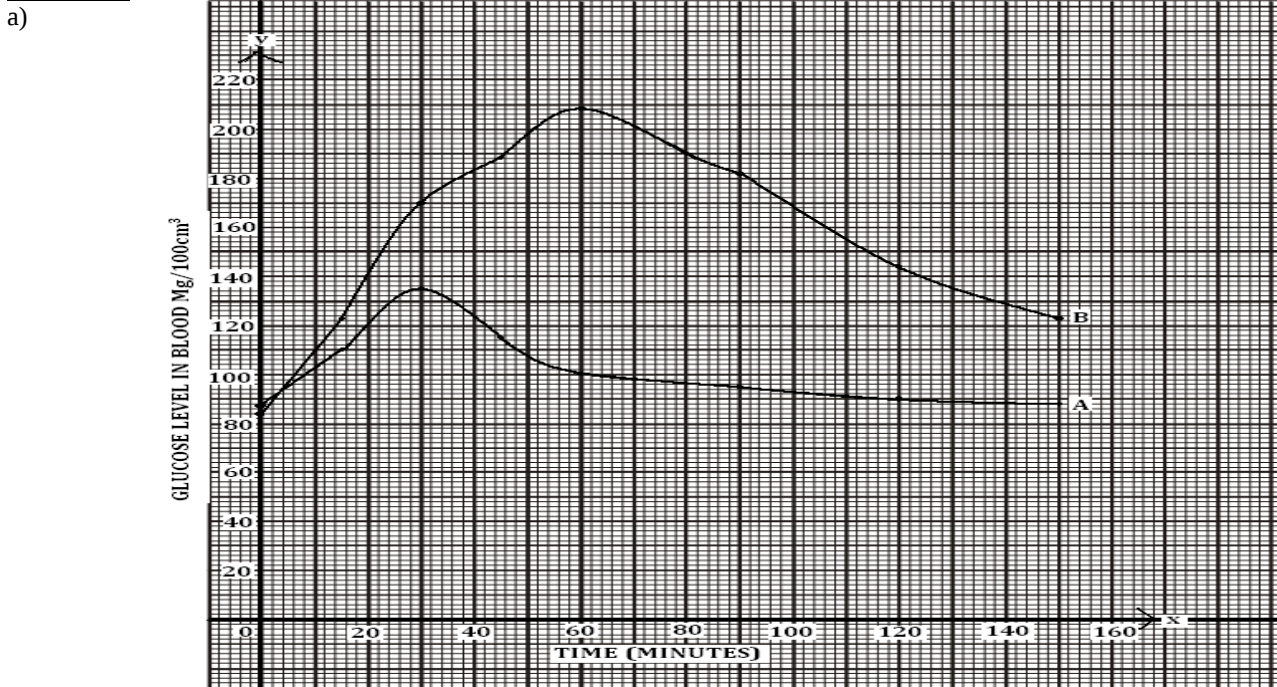
5.
 (a) Pneumatophores / Aerial breathing roots;
 - Stomata; (2marks)

- (i) 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)

- (iii)
 • 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
- b)
- A – 120 ± 1
 - B – 140 ± 1
- c) Person A is capable of regulating sugar while person B is likely to be diabetic
- d)
- 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.
- e) ATP (Adenosine triphosphate)
- f)
- Body size
 - Occupation
 - Age
 - Sex gender
 - Environmental condition e.g temperature
 - BMR

- State of the body viz ill; expectant mother;
- g) 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); (16mks)
(20mks)
8. (a) Digestion is the enzymatic breakdown of food; into products that can be absorbed; (2mks)
- (b) - Bile contains bile salts (sodium taurocholate 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;
(19mks max 14)