**FORM 3**

**231/2**

**BIOLOGY PAPER 2**

**MARKING SCHEME**

1. (a) (i) Bryophyta; rej. bryophyta

(ii) Thalloid;

\* show alternation of generations

\* have rhizoids

(b) A Produce spores

B Anchorage and absorption of water and mineral salts.

(c) Bryophytes Flowerings plants

(i) Lack vascular system (i) Have vascular system comprising

xylem

Vessels and phloem

(ii) Lack flowers (ii) Have flowers

(iii) Have rhizoids (iii) Have established root systems

(iv) Are thalloid (iv) Differentiated into stem, roots,

leaves

(v) Fertilization is water (v) Fertilization is independent of

dependant water

(vi) Berks spores (vi) Berks seeds

2. (a) Oxygen; as a factor necessary for germination.

(b) Absorbs oxygen

(c) Anaerobic respiration

(d) Glucose Ethanol + Carbon (IV) oxide + Energy

(e) Alcohol when in high concentration poisons plant tissues.

(f) Suitable temperature, moisture, seed viability, enzymes, hormones

3. (a) Time of the day when photosynthesis and respiration proceed at the same rate; so

that there is no gain or loss of carbohydrates.

(b) (i) Receive sufficient light energy to manufacture enough food; using low

light intensity.

(ii) Accumulation of sugar/net gain of sugars.

(c) Photosynthesis Respiration

\* Carbon (IV) oxide and water \* Oxygen used to break down

utilized to synthesize carbohydrates synthesized carbohydrates

\* Sunlight energy absorbed \* Energy liberated

\* Occur in green plants in presence \* Occur in all living organisms

of light at all times.

4. (a) Where fertilization occurs inside the body of a female organism.

(b) \* pregnant animals are vulnerable to predators.

\* too demanding in terms of nutrients from mothers

\* poses health risk to pregnant mothers

(c) Secretes hormone progesterone which maintains pregnancy

\* medium for gaseous exchange

\* medium for supplying nutrients to foetus.

\* medium for removing waste products from foetus.

(d) (i) healing and repair of uterine wall after menstruation

stimulate secretion of LH by pituitary gland

(ii) Maturation of Graafian follicle causing ovulation

High concentration causes remains of G.F to form corpus luteum

Stimulates corpus luteum to release progesterone

(iii) Causes primary follicle to develop to Graafian follicle

Stimulating ovary to release Oestrogen

5. (a) (i) Blood entering lungs has a lower concentration of oxygen and higher

Concentration of carbon (IV) oxide ; most oxygen has been used during

respiration; yielding more carbon (IV) oxide

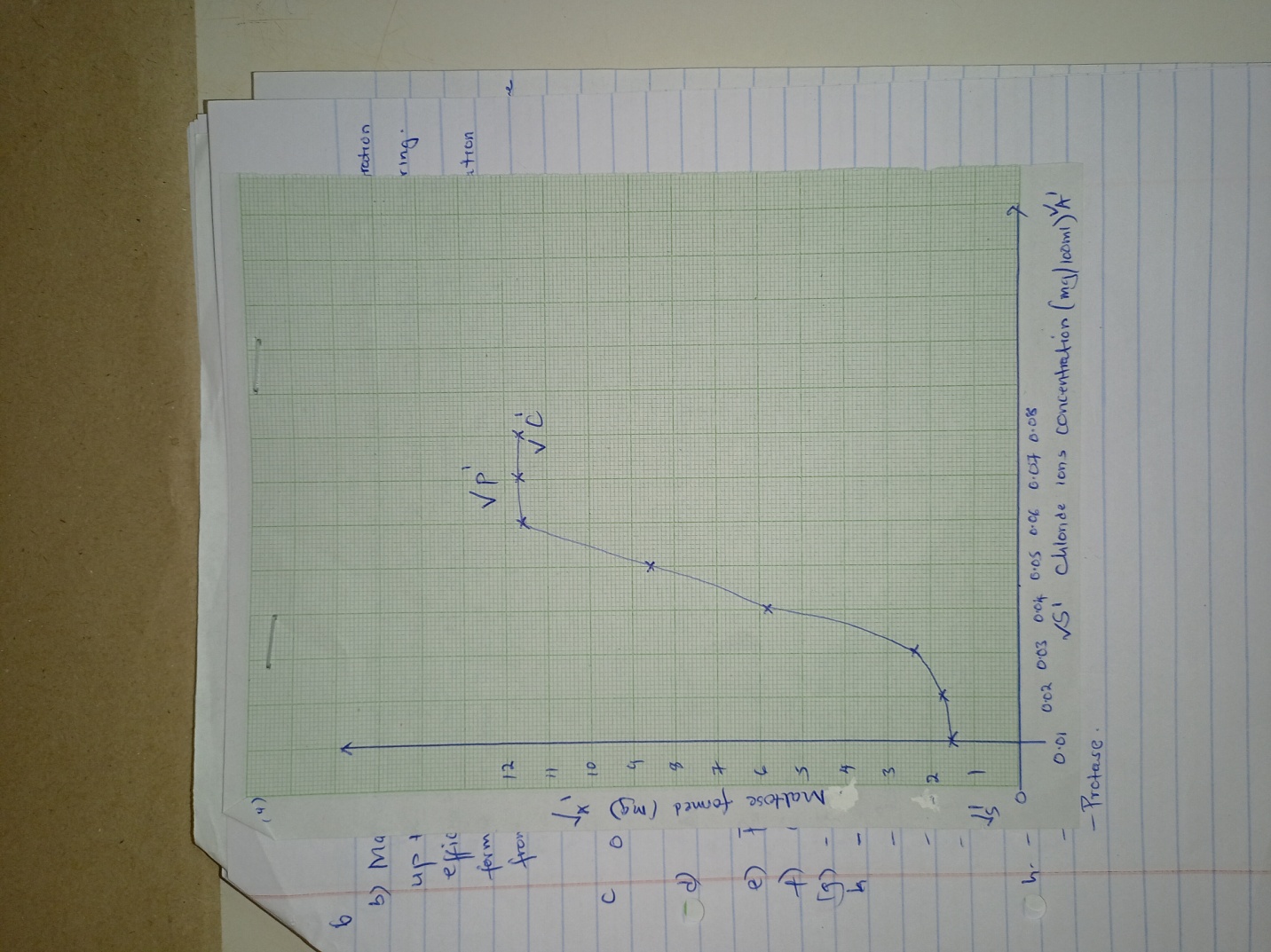
(ii) Blood leaving lungs has lower concentration of carbon(IV) oxide and

higher concentration of oxygen; it has been fortified. Nitrogen remains unchanged because it is not used up in respiration.

(b) Pulmonary artery

(c) High altitude areas have low oxygen consumption; the body responds by producing more red blood cells and hemoglobin; which carry most oxygen to the tissues for respiration; producing more energy.

6.



7. (a) The parasite utilizes two hosts; the fresh water snail and human to increase

chances of survival and transfer from one place to another.

\* have sockets to attach on host intestinal walls to prevent them from being dislodged.

\* Produces many larval forms – miracidia, cercaria and radia to increase chances of survival and transmission.

\* Larvae and eggs have glands that secrete lytic enzymes which soften tissues of human to allow penetration.

\* Adults form/produce chemicals which counter the action of host defense mechanism.

\* Produce many eggs to increase chances of survival.

(b) Discuss the adaptations of halophytes to their habitat (10 mks)

\* most have pneumatophores that facilitate gaseous exchange.

\* some halophytes such as mangroves have buttress roots for support and

Anchorage.

\* they have cells which are tolerant to dehydration in high salty environments.

\* sea weeds grow close to the water surface for exposure to light for photosynthesis.

\* most plants have succulent tissues to store water.

\* submerged plants are able to carry out photosynthesis under low light intensity.

\* they have stilt roots for anchorage.

\* their fruits have large parenchyma tissue for buoyancy thus keeping them afloat for dispersal.

\* in some plants, the seeds germinate while still attached to the parent plant. This facilitates propagation of the plants to form the next generation.

8. (a) Mechanism of gaseous exchange in mammals (14 mks)

Breathing in/inhalation

External intercostals muscles contract; while internal intercostals muscles relax;

lifting/raising the ribcage upwards and outwards; muscles of diaphragm contract;

and the diaphragm flattens; the volume of the thoracic cavity increases; while

pressure decreases; higher air pressure in the atmosphere rushes air into the lungs.

Breathing out/exhalation

External intercostal muscles relax; internal intercostal muscles contract; moving

the ribcage downwards and inwards; the muscles of diaphragm relax; the

diaphragm assumes dome shape; volume of thoracic cavity decreases; while

pressure forces air out of the lungs.

(b) Factors affecting breathing rate in mammals.

(i) Age

Young ones have high energy requirement for their active and high growth rate as compared to the old, as they have high oxygen requirement and have to eliminate carbon (IV) oxide from the cells.

(ii) Hormones/adrenaline

Production of adrenaline lead to increases rate of respiration increasing production of carbon(IV) oxide and oxygen requirement from the body.

(iii) Exercises.

High body activities lead to increased production of carbon(Iv) oxide which has to be eliminated very fast and oxygen requirement are high.

(iv) Atmospheric pressure.

At low atmospheric pressure the level of oxygen concentration is low hence high rate of breathing.