1. a) It is a change in body form of an organism in the course of its life cycle from egg to adult forms.

b) Enable an organism to grow in size and complexity.

Enable organism to occupy different habitats/ecological niches.

Pupal stage enables organisms go through unfavourable conditions increasing chances of

survival.

1. i) Pteridophyta rej. If P is not in capital.

ii) K – for anchorage; Absorption of water and mineral salts.

L – Produce spores

1. – Substitution
2. i) Ribosomes rej. ribosome

ii) Golgi bodies/apparatus

1. i) A – Duodenum

C – Oesophagus/gullet

ii) – Temporary storage of feaces/undigested materials

* Absorption of water

1. Piece A was placed in a hypotonic solution while B was placed in a hypertonic solution; inner cortex cells of piece A gained water while those of B lost water molecules by osmosis. Cortex cells in A became turgid and increased in length curving outwards while in B the cells became flaccid reduced in length curving inwards; The epidermal cells are covered by a waterproof cuticle hence do not gain or lose water;
2. a) photosynthesis;

b) Light/sunlight; energy

Chlorophyll;

1. a) – Are long to increase surface area for absorption of water and mineral salts

* Have numerous mitochondria to supply energy (for active uptake of minerals);
* Have thin walls for faster movement of substances;
* Have large sap vacuole with solutes for steep concentration gradient;

b) High humidity reduces concentration gradient of water vapour between the intercellular

air spaces of the leaves and atmosphere; hence reducing rate of transpiration;

1. a) Red blood cells.

b) Oxygen

c) – Made up of one cell thick wall/endothelium only which allows part of blood to move into

the intercellular space;

- Have narrow lumen to maintain high pressure;

- Have sphincter muscle at the arteriole end to regulate blood flow;

- Have pores on its walls; that enables the fluid part of filter out.

1. a) To hold the slide firmly on the stage;

b) Raises or lowers the body tube for longer distance to bring the image into focus;

1. i) A – reject nitrogen fixing bacteria; accept Rhizobium;

D – Nitrosomonus / Nitrococcus E – Nitrobacter

ii) E – Decay, death, decomposition, excretion Ace any one correct

1. a) Positive geotropism

b) – High concentration of auxins promotes faster growth on the lower side of the stem than

the upper side; 2

-High concentration of auxins on the upper side of the root promotes faster growth;

1. Substance x – galactose: product k – water; 1

Process v – condensation;

1. i) Homeostasis. – Maintenance of a constant internal environment;

ii) Osmoregulation. – Mechanism which regulates the osmotic pressure of internal environment of an organism. Regulates salt water balance,

b) Insulin;

Glucagon;

1. Y-Chromosome – Tuft of hairs sprouting from pinna; premature bladness; rej. baldness alone

X-Chromosome – colour blindness/haemnophillia;

1. Offspring can inherit undesirable characteristics from parents;

Sexual reproduction takes long time;

Fewer offsprings are produced;

It involves in two different sexes;

1. A-Dicotyledonae:

B-Monocotyledonae;

1. Short-sightedness is corrected by wearing concave diverging lenses; it diverges light rays before reaching the lens which then focuses light into the retina;

Q – Skeletal/striated/voluntary muscles;

R – Smooth/unstriated/voluntary muscles

1. a) Respiratory quotient = Volume of Co2 produced = 6 = 1

Volume of O2 consumed 6

b) The respiratory quotient gives an indication on the type of substrate oxidized and whether aerobic, anaerobic respiration or both are taking place.

1. a) Oxytocin

b) Follicle stimulating hormone rej. FSH

1. a) Ans. Anaphase I;

b) Homologous chromosomes separate at the equator/homologous chromosomes start migrating to the opposite poles; sister chromatids attached at the centromeres;

1. a) Ans. Tracheole; Rej. Tracheoles

b) Ans. It is moist to dissolve gases/for diffusion of gases in solution;

-It has thin epithelia to reduce distance for diffusing gases;

-It has numerous tiny tubes to increase surface area for gaseous exchange;

Mark first two correct answers.

1. a) Na+ ions – Ans. Active transport

Mg+ ions – Ans. Diffusion

1. It has stomata for efficient diffusion of gases; it is thin lamina to allow gases to diffuse through short distances; It has air spaces for easy circulation of gases; it has broad and flat lamina to provide large surface area for gaseous exchange. Mark 1st three
2. a) Because it is destroyed/denatured; by alkaline medium/bile salts in the duodenum;

b) They act as valves to regulate movement of food;

- They contract and relax to cause churning and push food along the gut/peristalsis;

- They contain secretory cells which secrete mucus and intestinal juice;

1. Substance – Lactic acid;

Reason – is toxic to the body cells

1. a) i) Wing of a bird; hand of a man. Flipper of a whale and foreleg of horse; NB:mark as

whole

ii) Wind of an insect and of a bird.

b) Divergent.

1. a) Basal;

b) - Light to float on water;

- Presence of air spaces/fibrous in their mesocarp for buoyancy; 3mks

- have seed coats and epicarps that are water proof to prevent soaking and sinking;

1. a) A – Sabaceous glands

B - Conified layer

b) C – Sweat gland – are involved in thermoregulation through loss of excess heat by evaporation of water; excess salts; removal of nitrogenous waste.

(Award – Excretion – 1 mark

- Thermoregulation – 1mark)

1. Cells of both are enclosed by cell wall; cells of both have vacuoles and granules that contain stored food. (2mks)