

KABONDO DIVISION JOINT EVALUATION TEST BIOLOGY MSCM PP1

- 1 i) Golgi bodies-package synthesized material;transport package synthesized materials; Formation of lysosome.
ii) Smooth endoplasmic reticulum:-Provide area for synthesis of liquids/ and steroid;transport the lipidin cell.
- 2 Contain chloroplast for photosynthesis; innerwal are thicker than outerwall causing stomata to open and close. (2mks)
- 3 $RQ = \frac{\text{Volume of Carbon(iv) oxide produced}}{\text{Volume of oxygen consumed}}$
 $= \frac{80\text{cm}^3}{79.9\text{cm}^3}$ 1mk
Food – Carbohydrates 1mk
Rej – If formulae is wrong
- 4 a) Hypothalamus; 1mk
b) When temperature is high arterioles dilate so that more blood can flow close to the skin surface allowing for increased heat loss to the surrounding from the body. During low temperature arterioles constrict (so that less blood flows close to the skin surface)) Thus reduce heat loss from the surrounding. 2mks
- 5 a) Movement of water molecules from dilute solution solution to concentrated solution throught semi permeable membrane/movement of water molecules from their region of high concentration to their region of lower concentration through a semi permeable membrane
b) Roles of transportation in living organisms
-Absorption of mineral salts by plantroots;
-Absorption of food in the small intestines;
-Accummulation of water in the kidney;
-Reabsorption of the kidney
-Maintenance of sodium and potassium ions
-Contraction invertors cells.
Any 2 x 1 = 2mks
- 6 a) Xylem: 1mk
b) Phloem 1mk

- c) Vascular cambium; 1mk
- 7 a) Fossil records-Gives evidence of types of plants/Animals that exist at a certain geographical age/longago.
Acc Give evidence of morphological/ anatomical structural changes that have taken place over a long period of time (1mk)
- b) Comparative anatomy
Give evidence of the relationship among organisms/common ancestry of a group of organisms (1mk)
Acc Correct examples of structural / functional relationship among organism;
- 8 a) FISH NET (1mk)
- b) $P = \frac{FMXSC}{MR} = \frac{396 \times 200}{100}; = 792 \quad (2MKS)$
- 9 - Stomata found only the upper epidermic to allow efficient gaseous exchange;
- Presence of the aernchyma tissues;
- Large air spaces to allow it to float;
- Absence of cotile for faster diffusion of gases;
Mark first two only (2mks)
- 10 a) Sortoli cells → Nourishment of spermatids/immature sperms/sperm cells/spermatozoa
- b) Epidymis → site for temporary storage of sperm cells/contract to allow ejaculation of sperms
- c) Seminiferous tubules →site for spermatogenesis/sperm synthesis/sperm formation.(3mks)
- 11 - Emulsification of fats/ breaking into small droplets; to increase surface area for digestion;
- Neutralize acidity of enzyme/provide alkaline medium for enzymes/(2mks)
- 12 Increase in substrate concentration
-Increases enzyme action upto a certain polut and further increase of substrate will have no effect.(1mk)
- 13 a) Tracheole;(1mk)
- b) - Moist to dissolve gases;
- Many/numerous tubes to increase surface area;

- Thin walls for gases to pass through a shorter distance;(2mks)
Mark 1st two
- 14 i) Tanning leather(1mk)
ii) Induces polyploidy/cancer therapy/treatment of gout(1mk)
- 15 a) All genes located on the sex chromosome and are transmitted together with those that determine sex;(1mk)
b) (Recessive) baldness
-Tufts of hair in the ear pinna and nose/hairy pinna;
- 16 Height;weight,skin colour;size of the ears/eyes : Rj length (Any three correct)
- 17 a) i) Peri Cardium; (1mk)
ii) - Secretes a fluid that acts as a lubricant/ reduce friction;
- Keeps the heart in position/ checks on over-dilation of the heart;(1mk)
b) Presence of Heparin; (1mk)
c) - Thrombosis;
- Varicose veins;
- Arteriosclerosis/ (1mk)
- 18 a) Thigmotropism
Heterotropism (1mk)

Rej Tropism
b) Contact causes lateral migration of auxin to the outside of the stem;higher auxin concentration promotes faster growth in the outer part of the stem than the part which is in contact with the object;thus the stem coil around the object;(3mks)
- 19 Lactic acid; (1mk)
Energy/ATP;
Award of the two products are correct
- 20 - Exposing the leaf to sunlight for photosynthesis;
- Exposure of the flowers to pollination agents;
- Exposure of fruits /seeds to agents of dispersal.
- To resist breakage due to own weight and other organisms (3mks)
Mark 1st THREE

- 21 a) X – Endosperm
Y – Seed Coat / Testa (2mks)
- b) Stigma; (1mk)

- 22 a) Entamoeba histolytica (1mk)
- b) Vibrio cholera (1mk)

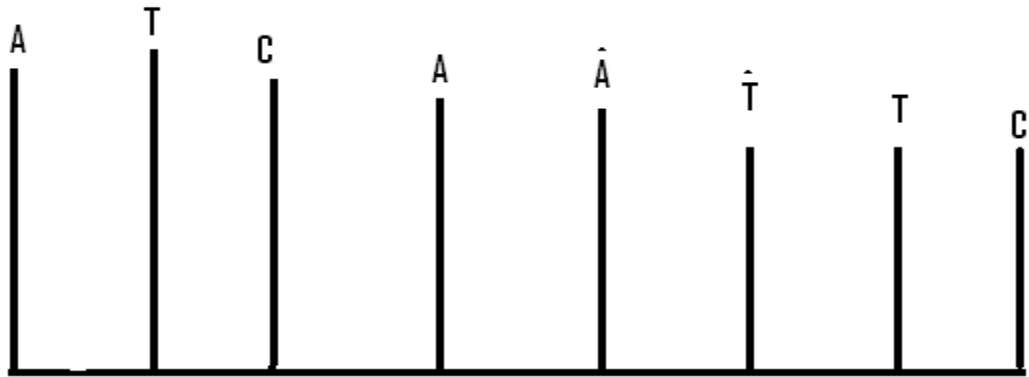
- 23 a) i) Formation of Larval Cuticle; (1mk)
ii) Moulting , Acc Ecdysis for moulting (1mk)
- b) i) W – Larva; Y - Pupa
ii) Butterfly

Butterfly	Cockroach
i) Complete metamorphosis	i) Incomplete metamorphosis
ii) Larva and Pupa stage present	ii) No larva and pupa state

- 24 Wide/ Broad ridge / Cosp; for crushing and grinding food; (1mk)
- 25 a) Conversion of ammonia to nitrate; (1mk)
- b) Fixation of nitrogen gas into ammonia; (1mk)
- c) Converts Nitrates into free nitrogen gas (1mk)
- 26 a) Removal of terminal bud removes source of auxin,hence remove epical dominance and promotes development of auxiliary buds (2mks)
- b) Pruning of coffe,Tea to increase branches thus increase production (1mk)
- 27 a) B – Rhizoid; Rj Rhizoid/ Oval
- b) Production of spores and encloses them till they are mature; (1mk)
- c) Division – Pteridophyta; (1mk)

- 28 a) Lucagon – promotes conversion of glucogen to glucose;
b) Anti-duretic hormone – makes the kidney tubules more permeable to water, hence increasing re-absorption of water and preventing excessive water loss;
- 29 - Hydrolyses stored food;
- Softens the testa;
- Transport hydrolysed food to growing points;

- Medium of chemical reactions;
- Activate enzymes;
- Dissolve the food (3mks)
- 30 - Highly vascularized for transport of gases;
- Thin for faster of gases;
- Moist to dissolve the gases
- Long to increase the surface area for efficient gaseous exchange; (2mks)
- 31 a) They are very active; hence have many mitochondria to produce energy.
b) Provide a large surface area for attachment of enzymes used in respiration;
c) Glycolysis; (1mk)
- 32 i) Hypocotyl elongates faster upwards pulling the cotyledons and plumule out of seed coat/ and of the soil
ii) I s a tough (protective) sheath that protect the delicate tip of the shoot from mechanical damage (during germination);
iii) Oxygen – Required for respiration/ oxidation of stored food to release energy; (1mk)
- 33 a) 5carbon sugar/nitrogenous phosphate; (2mks)
b) i) Ribonucleic acid / RNA (1mk)
 ii)



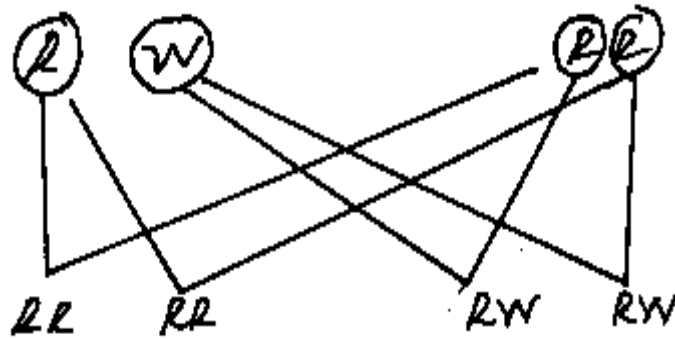
(1mk)

KABONDO DIVISION JOINT EVALUATION TEST BIOLOGY MSCM PP2

- 1 a) Pisces;
 b) i) I Body;
 II Gills; rj Gill
 ii)

	R	P
1	Blood with more CO ₂ and less O ₂	Blood with more O ₂ and less CO ₂ ;
2	Blood flows at low temperature	Blood flows at high temperature

- c) i) Root pressure depends on presence of actively respiring cells which require oxygen for respiration;
 ii) Stomata closes to reduce rate of transpiration;but reopens after a short while to allow for entry of Carbon (iv) Oxide necessary for photosynthesis;
- 2 a) The gene for dark red colour and the gene for while colour are co-dominant;
 b) i)
- Parents O → Q



i) Offspring Genotypes RR RR RW RW

ii) Genotypic ratio: 2RR : 2RW

iii) The phenotypic ratios of the offspring

2Dark red : 2 Light red.

iv) The probability of getting a light red offspring is $\frac{2}{4} = \frac{1}{2}$. Acc 50%.

3 a) Osmosis;

b) Water molecules are drawn from pawpaw cells (by sugar crystals) through Osmosis; Sugar dissolves forming a solution; Pawpaw cells become concentrated and draw more water molecules from the petri dish by Osmosis leading to rise in level of solution;

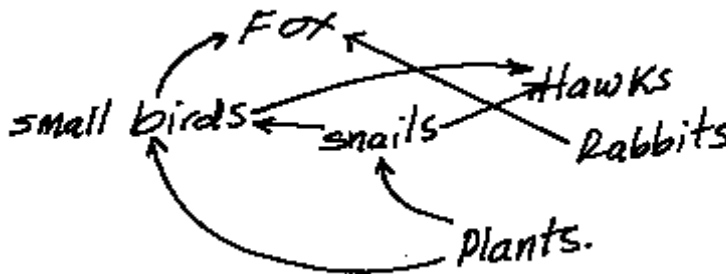
c) Sugar crystals will not dissolve/No solution would form;

Reason:Boiling kills cells/destroys the cell membrane hence no Osmosis.

- d) Absorption of water by plant roots;
- Opening and closing of stomata;
- Feeding in insectivorous plants;
- Mechanical support in plants;

Mark first 2

- 4
- a) This is the excessive growth/rapid growth of water plants(algae bloom); due to release of nutrients(phosphates,nitrates ,sulphates) into the water bdy; as a result of discharge of domestic sewage/agricultural fertilizers into the water body;
 - b) Reduces amount of gases dissolved in water causing suffocation of fish leading to death;
 - . Leads to reduced light penetration in water reducing the rate of photosynthesis hence depriving fish of food causing death due to starvation;
 - . When algae decays it reduces rate of oxygen content in water which reduces the rate of respiration in fish hence death;
 - . The chemical substances released in the water body accumulates in the body of fish leading to death;
 - c) Agricultural inorganic fertilizers contain phosphates and nitrates; this increases soil acidity; so that soil micro-organisms cannot inhabit that soil; decomposition of organic matter slows down and stops; making the soil infertile.
- 5
- a)



- b) i) Plants → Snails → Small birds → Hawks;
ii) Fox and Hawks compete for small birds;
- c) Capture – Recapture Method;
Rj Capture and recapture method.
- d) The mark does not harm or alter the animals behavior; The rabbits mix freely with others; The population does not vary during the study;
Mark first 2
- 6 a) i) $105 \pm 1\text{MM}$
ii) 134 – 140MM
- b) Graph A: The tip of the shoot which was removed contained Indole acetic acid (IAA) which causes apical dominance/inhibit growth/development of lateral buds; hence lateral buds sprouted/formed/grew;
- Graph B: The gibberellic acid which was added on the cut promoted the formation of lateral branches on the stem; hence the fast growth of branches on shoot B.
- Graph C: The shoot tip which remained intact contains IAA which inhibits growth/development of lateral buds; hence little change of length of lateral buds;
- c) Controls;
- d) Increase in productivity since more lateral branches are formed.
- e) Promote cell division;
Induce germination in plants
First 2

- 7 The dicotyledonous stem has the following functions
- Support and expose the leaves to sunlight for photosynthesis.
 - Supports and expose flowers to agents of pollination.
 - Supports and expose fruits and seeds to agents of dispersal
 - Conducts manufactured food materials from the leaves to the roots.

The dicotyledonous stem has several strengthening tissues to provide support to the plant; the support tissues are the collenchymas and sclerechyma tissues which are strengthened with cellulose and lignin respectively;

The stem has xylem tissues made of xylem vessels and tracheids; the xylem vessels have lignified walls to prevent them from collapsing thus helps to maintain transpiration pull;xylem vessels are narrow; to enhance capillarity ;xylem vessels lack cross walls; to

allow for continuous column of water;xylem vessels have bordered pits ; for lateral movement of water and mineral salts.

The phloem sieve elements contains cytoplasmic strand which are continuous from one sieve table to the next through pores; through which organic food materials are transported; the phloem has numerous Mitochondria; to provide energy for active transport of organic food materials;the phloem tissues has cell organelles pushed to the peripheri; to give more room for passage of food materials.The phloem have sieve tube cells placed end to end for a continuous flow of food materials;

Plasmodesmata connects the cytoplasm of the companion cell and the sieve elements allowing passage of proteins and adenosine triphosphates; to be used in the translocation of organic compounds;

The stem vascular bundles have cambium; for cell division to bring about secondary growth; parenchyma cells; store water and food; suberin; in the stem epidermis prevents mechanical injury; excess loss of water; and entry of pathogens;

The stem has lenticils; that facilitate gaseous exchange.

The stem may have parenchyma cells; with chlorophyll for photosynthesis;

- 8 Saprophytic fungi such as Rhizopus ssp decompose organic remains; into absorbable nutrients; this helps in sewage treatment and decomposition of organic matter thus increasing soil fertility;

Some fungi are used in the manufacture of antibiotics; eg penicillium ssp is used in the manufacture of penicillium;

Some fungi are used as rich sources of food for human; eg Mushroom; some like candida ssp are used to enrich livestock feeds;

Yeast is used in alcoholic fermentation for the production of alcoholic drinks; It is also used in bread baking; Yeast is a rich source of vitamin B₂ and B₁₂;

Some fungi cause diseases to man, crops and livestock; eg Ringworms in man and potatoe blight in plants caused by phytophthora infestans

Some fungi cause food spoilage making the food unfit for human consumption eg Rhizopus ssp; Aspergillus ssp produces aflatoxin; which destroys stored grains;

Rhizopus ssp/Mucor ssp are used in making natural fibres like flax; and in the curing of tobacco;

Fungi is used in making cheese; Some fungi are used in the synthesis of enzyme amylase;

Some fungi such as Gibberella ssp; are used in the synthesis of Gibberellins; which are used to induce germination in plants;

KABONDO DIVISION JOINT EVALUATION TEST BIOLOGY MSCM PP3

1 a)

Food substance	Procedure	Observation	Conclusion
Starch	Put 1 ml of k and add drops of iodine	No observable change	Starch present
Reducing sugars	To 1ml k add equal amount of Benedict solution and boil	No observable colour/change of Benedict retained	Reducing sugar absent
Non reducing sugars	-To 1ml of k add 2 drops of dilute HCL and boil. -Cool and add NaHCO ₃ until fizzing stops; -Add equal volumes of Benedict solution and boil	Colour changes from blue to green to yellow/brown/orange	No reducing sugars present
Protein	To 1ml of k add 1ml of NaOH followed by 2 drops of copper sulphate then shake	Purple/violet colour observed	Protein present

(12mks)

- b) i) Sucrase (1mk)
- ii) ileum (1mk)
- 2a1 a) Body bilaterally symmetrical..... Go to 2
- b) Body radially symmetrical..... Sea anemone
- 2 a) With limbs go to 3
- b) Without limbs..... go to 7
- 3 a) With six legs..... Go to 4

- b) With more than six legs go to 5
- 4 a) With two pairs of wings Honey bee
- b) With one pair of wings House fly
- 5 a) With eight legs Spider
- b) With more than eight legs go to 6
- 6 a) With two pairs of legs in each segment Millipede
- b) With one pair of legs in each segment Centipede
- 7 a) Body segmented Earthworm
- b) Body not segmented Roundworm
- (allow 1mk for 13 correct steps – 13 x 1 = 13 mks)
- 2 b) i) Arthropoda; Rej. Wrong spelling (1mk)
- ii) Body segmented/Jointed appendages/Segmented body. (1mk)
- 3 a) i) A-Capsule (4mks)
- B-Seta
- C-Rhizoids
- D-Sorus
- ii) P-Bryophyta (2mks)
- Q-Pteridophyta
- b) P-Archegonium (2mks)

Q-Sorus

c) Prothallus

Sporophyte



Gametophyte