**MWAKICAN JOINT EXAM TEAM**

**FORM 3 BIOLOGY PP 2 MARKING SCHEME**

**END OF TERM 2 – 2015**

1(a)(i) A - Nucleus

 C - Cell wall

(ii) - Maintain the shape of the cell;

* Providing support to herbaceous plants; (any 1)
* Stores sugar and salts;

(b) Hypotonic solution / dilute solution / dilute sugar / salt solution.

(c) The potato cell sap was lowly concentrated than the surrounding solution; hence lost

 water molecules by osmosis (through semi-permeable membrane) to become plasmolysed.

(d) - Opening and closing of stomata.

 - Absorption of water by root hairs.

 - Absorption of water in intestines.

 - Reabsorption of water in kidney nephron. (any 2)

 - Feeding in insectivorous plants.

 - Movement of water from cell to cell.

 - Osmoregulation.

2(a) Cartepillars

1. Aphids

Mice each (1/2 mk)

Slugs

1. Primary consumers

(b)(i) Plants Cartepillars Insectivorous hawks ;

 Birds

 (ii) Plants Slugs Frogs Snakes Hawks (any 1)

 Plants Aphids Beetles Insectivorous Hawks

 Plants

(c)(i) Largest Biomass - plants

 Directly obtain energy from the sun.

(ii) Least biomass - Hawks

* Loss of energy in form of heat, respiration, defaceation, excretion.
1. Sun / solar energy.

3(a) A - Villus

 B - Lacteal

(b) A - Increases surface area for maximum digestion and absorption.

 B - Absorption of fatty acids and glycerol.

(c) - Final digestion of food.

 - Absorption of soluble products of digestion.

(d) Produces bile juice which contain bile salts that emulsify fats; and neutralizes the acidic chyme from the stomach;

4(a) Deamination

(b) Liver

(c) - Removal of excess amino acids.

 - Availing of energy in the body. (any 1)

 - Formation of glycogen / fats for storage.

 (award any one)

(d) Urea

(e) It is transported to the kidney where it is excreted.

(f) (i) Diabetes inspidus

 (ii) Antidiuretic Hormone / Vasopressin

 (iii) Pituitary gland.

5(a) To remove / expel dissolved air from the glucose solution.

(b) To prevent entry of oxygen into the yeast – glucose solution.

(c) Anaerobic respiration.

(d) Becomes white precipitate.

(e) High temperature kills the yeast cells; hence the reaction stops;

(f) - Making of beer / Brewing / Ethanol / Alcohol.

 - Baking industry / Raising of the dough. (any 2)



6(a)

1. Axes labelling (2mks)

 Scale (x and y – axis) (2mks)

Curve plotting - each (1mk) total 2mks

Curve labeling - each (1mk) total 2mks

(b)(i)The population of locusts increase with increase in the amount of rainfall.

(ii)Increased amount of food;

Improved breeding conditions;

1. The population of both decreases;

Less food availability to locusts and crows.

1. Capture – Recapture method.
2. (i) Locust – Primary consumers

 Crows – Secondary consumers

(ii) Grass Locusts Crows

1. Grass would increase

 crows would reduce

1. (i) Biomass – The total dry weight of organisms at a particular trophic level.
2. Ecosystem – A natural unit composed of abiotic and biotic factors whose

interactions lead to a self-sustaining system.

1. Xerophytes
* Have thick cuticle to prevent cuticular transpiration.
* Have reduced stomata on lower leaf surface to lower transpiration.
* Fold or curl leaves in dry weather to protect stomata from direct sunlight.
* Have reversed stomatal opening rhythm where they open at night to reduce water loss.
* Have succulent stems and leaves to store water for use in dry season.
* Some have superficial roots to absorb light showers of rain.
* Some are deep rooted to absorb water from water table.
* Shedding of leaves during dry season.
* Some have short life cycles and survive as underground perennating structures or seeds during drought.
* Hairy leaves.
* Sunken stomata 1 x 10 = 10mks.

Hydrophytes

* Submerged plants have dissected leaves to increase surface area for maximum light absorption.
* Emerged plants have broad leaves with stomata on upper surface to increase transpiration.
* Have aerenchyma tissue to increase buoyancy and for gaseous exchange.
* Floating water plants have raised flower for pollination.
* Poorly developed roots that lack root hairs to reduce absorption of water.
* Some submerged plants have sensitive chloroplasts that photosynthesise in low light intensities. 5 x 2 = 10mks
1. High body temperature above normal:
* Sweat glands; Produce sweat; water in the sweat evaporates / sweat evaporates; absorbing latent heat of vaporization producing a cooling effect;
* Hairs lie flat; due to relaxation of erector pilli muscles; no / little air is trapped; hence increased heat loss from the body;
* Blood vessels / arterioles; vasodilate / dilate; more blood flow to the skin hence loss of heat from the body, by radiation and convection;

When body temperature is low below normal:

* Sweat glands produce less / no sweat; no latent heat is absorbed; more heat retained in the body;
* The hairs stand upright / erect; to trap air between them; that insulate the body against heat loss; more heat retained in the body.
* Blood vessels / arterioles vasoconstrict / constrict;

Less blood flow to the skin; reduces heat loss / more heat is retained in the body;

 (20mks)

 (;) means a marking point.