**CASPA AMUKURA PARISH JOINT EVALUATION**

**EXAMINATION FORM FOUR 2021 MARKING SCHEME BIOLOGY PAPER TWO**

**1.a)** P- Stomatal pore / opening / aperture; Rj stomata

 Q- Epidermal cell; Rj Epidermis.

 (2mks)

1. Guard cells have churoplasts hence in the presence of light/ during the day

photosynthesis occurs in guard cells; producing sugar in guard cells that increases osmotic pressure; water from epidermal cells enters into guard cells; causing turgidity of cells; the inner walls of the guard cells are thicker than outer walls; hence inner walls stretch more during turgidity; causing guard cells to bulge outer wards; (stomata open)

 7mks. Max 5.

1. - Reversed rhythm;

- Small stomata / stomatal pore / aperture/ opening;

 2marks, max . 1mk

1. (a) To investigate if Carbon (IV) Oxide is necessary for photosynthesis; (1mk)

(b) (i) A – No starch; acc Brown colour

 B – Starch present; acc Blue black colour (2mks)

 (ii) A – Absence of Carbon (IV) Oxide hence no photosynthesis;

 B – Carbon (IV)Oxide present , the leaf photosynthesized; (2mks)

(c) Control (experiment); (1mk)

(d) Destarch the leaves /plant; OWTTE (1mk)

(e) Chloroplast; (1mk)

1. (a) Anaerobic respiration; (1mk)

(b) (i) Air bubbles; Lime water turns white precipitated; (2mks)

 (ii) Yeast cells respired (anaerobically); producing carbon (IV) oxide (2mks)

(c)  (1mk)

(d) - Manufacture of alcoholic drinks;

 - Baking of bread/ raising dough; (2mks)

1. (a) X- Anther/ male part

Y – Style/ pistil/ female part

 (b) Epigyneous / superior flower/ ovary above the other floral parts

 (c) (i) Wind Pollinated flower;

 (ii) Anthers located above the stigma;

 (Rej. Brightly coloured petals/scented/nectarines)

 (d) X/W;

 (e) 30 chromosomes;

 (f) Anthers located below the stigma;

 self – sterility / incompatibility

 Protandry/ male parts (stamen) maturing earlier than the female parts (pistil)

 Protagyny / female parts (pistil) maturing earlier than the male parts (Stamens);

 Any one stated correctly = 1mk

5.(a) (i) HH; and hh;

 (ii) Hh

 (b)

(c) The RJ if the information on the left is wrong/ if given, the gene for purple colour is dominant/ gene for white colour is recessive;

6.

See graph.

Scale = 2mks

Labeling axes = 2mks

Plot = 1mk

Curve = 1mk

(b) 340C -370C; (1mk)

(c) (i) Long time taken (to digest starch); because enzymes were inactivated (by low temperature below optimum); (2mks)

(ii) Long time taken (to digest starch)/75 minutes; enzyme /salivary amylase was denatured/ destroyed (by temperature above optimum); (2mks)

(d) – PH;

- Enzyme concentration;

- Substrate concentration;

- Enzyme inhibitors;

- Enzyme specificity;

- Cofactors and coenzymes (3mks)

(e) - Mouth

 -Duodenum

 (2mks)

1. (i) - Fe/iron;
	* magnesium
	* Zinc
	* Copper

 (ii) Activate enzymes; (1mk)

1. Proteins; (1mk)

1. Has nerve endings/ sensory cells; which are sensitive to stimuli/ heat/ cold/ touch/ pain/ pressure; Subcutaneous fat/adipose tissue; insulate body against heat loss; Sebaceous glands; secrete sebum an oily substance which is water repellant/ prevents drying/ cracking of skin/ keeping skin supple/ sebum is antiseptic which kills micro – organisms entering through the skin; Has blood vessel; that supply food/oxygen/ remove excretory products;

 When temperatures are high blood vessels/ arterioles vasodilate to lose heat by convection/ radiation/ vasoconstrict when temperature are low to conserve/ reduce heat loss; (20mks)

1. Broad / wide / flat lamina; to provide large S.A; for absorption of CO2/sunlight;Thin; to ensure short distance for CO2 to reach photosynthetic cells/palisade/mesophyll;Guard cells/ presence of stomata; for efficient diffusion of CO2 into leaf/ oxygen out of leaf/ gaseous exchange/ water vapour/ transpiration;Transparent cuticle/epidermal cells; for penetration of light; into palisade cells/ photosynthetic cells.Palisade cells contain many chloroplasts; to trap light (for photosynthesis);Chloroplasts have chlorophyll; for trapping light energy; Leaves have veisn; Xylem to conduct water to photosynthetic cells; and phloem to translocate the photosynthates to other parts of the plant;Air spaces in spongy mesophyll; for gases to circulate/diffuse easily/ for CO2 to diffuse into palisade cells;Mosaic arrangement of leaves; enables all leaves to trap sunlight; Palisade cells are next to upper epidermis for maximum light absorption (by chloroplasts)

 (20marks)