**231/1**

**BIOLOGY**

**PAPER 1**

**THEORY**

**APRIL 2023**

**SUNRISE 1 EXAMINATIONS TERM 1**

**Kenya Certificate of Secondary Education**

**BIOLOGY**

**PAPER 1**

**MARKING SCHEME**

1. (a) Mirror – reflects light through the condenser to the object (1mk)

(b) Diaphragm – regulates the amount of light passing through the condenser to illuminate the

specimen; (1mk)

1. (a) Platelets; (1mk)

(b) Calcium ions; (1mk)

(c) Fibrin; (1mk)

1. (a) DNA; base thymine is present (Thymine is absent in RNA strand); (2mks)

(b) T – T – C – A – G; (1mk)

1. (a) An invagination develops at the area of contact with the bacteria/the cell membrane fold and cytoplasm flow around the bacteria forming a food vacuole/phygocytic vesicle; a process called phagocytosis (2mks)

(b) Lysosomes secrete enzymes into the food vacuole/phagocytic vessicle; digestion occurs; soluble food diffuses into the cell; undigested materials are expelled when the vacuole moves to the edge and fuses with plasma membrane (2mks)

1. - Growth; repair of tissues, maintenance of genetic material/retain chromosome number, asexual reproduction; (3mks)
2. Large quantities of pollen grains; smooth pollen grains; loosely hanging anther; small light pollen grains; large fatherly stigma; long filament (any 4; 4mks)
3. (a) Urea;

(b) Carbon (iv) oxide;

1. - Absorption of water mineral salts e.g. iron, calcium; and absorption of vitamins;

- Secretion of mucus that holds faecal matter and lubricates the intestinal wall for smooth passage of faeces; (2mks)

1. a) Herbivorous rej. Herbivore (1mk)

b) Absence of incisors and canines on the upper jaw. (2mks)

1. (a) Vibrio cholerae;

(b) Salmonella typhi;

(c) Entamoeba hystolytica; (3mks)

1. Reabsortion of glucose and some mineral salts by the kidney tubules;

Absorption of digested food, mineral salts and vitamins from the alimentary canal into the blood stream ;

Excretion of waste products from cells; reabsorption of useful materials into the bloodstream from tissue fluid; (any 3; 3mks)

1. By rhizobium bacteria into root nodules of leguminous plants;

By action of lightning;

By azotobactor, chlostridium;

By haber process/industrial fixation

(Any 3; 3mks)

1. a) Capture recapture method. (1mk)

b) 

=

=3596 weaverbirds. (2mks)

c) The released animals may not mix freely .

Some organism may move in and out of the study area. (1mk)

1. (a) Exoskeleton/cuticle; (1mk)

(b) Provide a large surface area for muscle attachment; protect internal organs from injury; prevent entry of harmful micro-organisms (any 3; 3mks)

1. (a) (i) Bell jar – ribcage/thorax; (1mk)

(ii) Balloons – lungs; (1mk)

(b) Inhalation; because balloons are filled with air; the rubber sheet representing diaphragm is flattened; (2mks)

1. Endoderms are active throughout while ectoderms are active when the environmental temperatures are low;

Endoderms are widely distributed in different areas while ectoderms are found in areas with relatively high temperatures (2mks)

1. (a) They are inert;

(b) The fats are a source of metabolic water; they are a source of energy;

1. (a) A – Seeds; (reject seed) (1mk)

B – Placenta; (1mk)

(b) P – Parietal; (1mk)

Q – Free central; (1mk)

1. Duodenum;
2. Parents ♂ ♀

Phenotype Rhesus positive Rhesus negative

Genotype Rhrh x rhrh

Gamete Rh rh rh rh

Fusion

Offsprings Rhrh Rhrh rhrh rhrh

Rhesus positive rhesus negative

1. Mitochondrion; nuclear membrane; (2mks)
2. Lactic acid; toxic/poisonous to the body cells;
3. (a) At 00c the enzymes responsible for germination are inactivated;

(b) At 470c the enzymes are denatured;

1. Insulate the body;

Oxidized to release energy and water when carbohydrates are exhausted; (2mks)

1. (i) Aerobic respiration (1mk)

(ii) RQ = CO2 produced (1mk)

O2 consumed

= 57 (2mks)

80

= 0.7

(iii) Fats/lipids (1mk)

1. Replication of organelles; duplication of DNA; production of energy (ATP) for entire cell division (1mk)
2. (a) To break down water into its components /splits water molecules into oxygen and hydrogen ions;

(b) Hydrogen; oxygen; chemical energy/ATP;