Name……... Adm No…… Class…….

Index No…….. School…….. Sign ……..

DATE ……..

231/2
BIOLOGY
PAPER 2
JUNE 2024
TIME: 2 HOURS

MIRROR JET EXAMS 2024

TERM TWO 2024

Kenya Certificate of Secondary Education. (K.C.S.E)

231/2

MARKING SCHEME

Q1

A

B. Protect the objective lens from staining;

To hold the specimen in place;

Protect the specimen from dehydration;

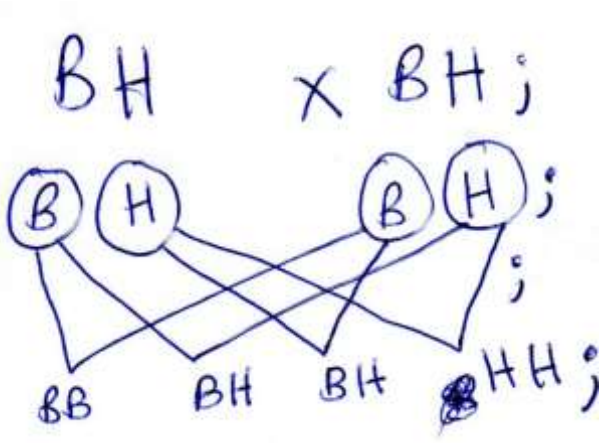
(3mks)

C. Click the low power objective lens into position/ Bring it down to the lowest level; using coarse adjustment knob;

With eyes on the eyepiece lens and using the coarse adjustment knob gradually raise/ lower the low power objective lens to bring the specimen into focus; (3mks)

Q2

A.



Genotypic ratio 1BB : 2BH : 1HH;

B. 1 Black : 2 Black and White : 1 White;

C i) Co-dominance; Rj Incomplete/ partial dominance.

ii) ABO Blood group; Rj Blood groups alone.

Q3

A. – Fleshy fruits/ juicy/ succulent;

- Brightly coloured/ large/ in clusters;
- Scented/ sweet smell/ sweet aroma;
- Seeds have tough / hard testa;
- Some seeds have sticky/ mucoid secretions;
- Fruits have hooks; **Mark first 4**

B. i) – Stimulates ovulation;

- Stimulates development of remains of graafian follicle into corpus luteum;
- Stimulates corpus luteum to produce progesterone; **Mark first 2**

ii) – Causes contraction of uterus;

- Causes release of milk from mammary glands;

Q4

A. Root hairs absorb water by osmosis; cells of the plant become turgid; leaves become firm/ spread out/ plant become upright/ firm; Rj it/plant absorb.

B. i) Collenchyma;

ii) Xylem/ Tracheids/ Vessels/ Sclerenchyma;

C. – Steering;

- Balance;

- Braking;

- Changing direction

- Prevent fish from pitching; **Mark first 3**

Q5

A. i) Circular muscles of the iris relax while radial muscles contract; increasing size of the pupil hence more light enter into the eye;

ii) Light is perceived by the retina for clear vision;

B. Choroid layer has a dense network of blood capillaries; from which nutrients diffuse out to supply the eye;

C. The blind spot has no photoreceptors; hence no impulses are generated to be transmitted to the brain;

Q6

A. -Correct scales – 1mk

-Plotting - 2mks

- Leblled axes – 2mks

- Identification – 2mks

B. i) Low/ below normal level of glucose in blood; No/ little digested food/ glucose from intestines is absorbed; Acc: Constant for low

ii) -(Sharp) increase in concentration of glucose in blood;

- (More) absorption of glucose; after digestion of the meal;

iii) Glucose concentration decreases; less glucose being absorbed; (More) glucose being converted into glycogen/ used for respiration;

C. Concentration of glucose in the iliac vein is lower that that in the hepatic portal vein; because most of it was stored/ used in respiration; OR Concentration is higher in hepatic portal vein than in iliac vein; because it has been stored/ used in respiration;

Q7.

Nitrogen in the air is converted through Nitrogen fixation; by nitrogen fixing bacteria; e.g. Rhizobia in root nodules; or free living bacteria in the soil e.g. Azotobacter; to form nitrates in the soil; nitrates are absorbed by plants; to form plant protein; plant proteins are converted into animal proteins; when herbivores feed on plants; the proteins are transferred to form carnivore proteins; when carnivores feed

on herbivores; free nitrogen is also fixed into nitrates by lightening/ thunder storm; lightening provides energy; that combines nitrogen and oxygen to form nitrogen oxide; that reacts with water to form weak acid; the weak acid dissolves in water; and dissociates forming hydrogen ion and nitrates that are absorbed by plants; proteins in plants and animals are converted to ammonium compounds after death and decay; the ammonium compounds are converted to nitrites by Nitrosomonas/ nitro coccus; Nitrites are then converted to nitrates by nitrifying bacteria/ Nitrobacter;

Q8.

Environmental factors which affect the rate of transpiration in flowering plants

i) Humidity; When the atmosphere is dry, the concentration of water vapour in the intercellular spaces is higher than in the air surrounding the leaf; hence diffusion gradient is higher when humidity is low;

ii) Temperature; When temperature of atmosphere raise, the temperature of the leaf rise increasing the vapour pressure in the different gradient; hence increase in transpiration from the leaf cells;

ii) Light intensity; High light intensity increase internal temperature of leaf; thus increasing evaporation rate in the intercellular space; hence higher rate of transpiration; high light intensity increase rate of photosynthesis; in guard cells resulting in opening of stomata; thus more water is lost to the surrounding; (hence high rate of transpiration);

iv) Wind/ air currents; the windy conditions moist air around a leaf is blown away; increasing diffusion gradient hence higher rate of transpiration;

v) Water Availability; With more water available from the soil; Mesophyll cells in the leaves will be moist and give more water to the intercellular spaces increasing diffusion gradient; at the same time guard cells are turgid and stomata remain open and hence water is lost to the atmosphere;

vi) Atmospheric pressure; At high pressure, evaporation of water from intercellular spaces is reduced therefore transpiration rate is low; on the other hand if the pressure is low, the rate of evaporation is higher and there is a greater loss of water hence higher transpiration;