

ASUMBI GIRLS HIGH SCHOOL
POST -MOCK 1
AUGUST/SEPTEMBER
2022

BIOLOGY PP2 MS

1. a) Blood coming from the body has supplied the tissue cells with oxygen/ oxygen has diffused out of capillary into the tissue fluid;
b) Oxygen concentration at B reduces/will be at lowest; because blood at P has a lower oxygen concentration creating a diffusing gradient; From A to B there is a diffusion gradient hence at B much oxygen has diffused into the from water into the blood;
c) Heart
d) Amount of exchange of respiratory gasses between blood and water would reduce; because of reduced diffusion gradient;
e) Counter flow system.

2. a) – Industrial effluents because the factory is close to the river.
- Domestic effluents since some houses are next to the river and the marsh.
b) i) Drinking water contamination since the water works is close to the sewage works;
ii) Spread of diseases to residents nearby because many pathogens and diseases vectors are found in the sewage works and refuse pit near the houses;
iii) Air pollution because the prevailing wind carries unpleasant smell over the town;
c) The swamp is the breeding site for mosquito larva hence adult mosquitos may spread malaria to residents living nearby.
d) – Treating industrial and domestic effluents before releases it into the water.

- Cooling the water from the factories to avoid raising water temperature in the river and swamp.

- Carry out environmental impact assessment before establishing factories/industries;

etc

3. a) A – Coleoptile

B – Remaining of seed / seed.

b) A - Protects the delicate plumule as it pushes through the soil during germination.

B – Contains stored food which is hydrolyzed and used by the germinating seed / seedling before the seedling starts to photosynthesize.

C – Anchors the seedling.

- Absorbs water and mineral ions.

c) Hypogeal germination.

d) – Optimum temperature / warmth.

- Growth hormones.

- Viability of seed

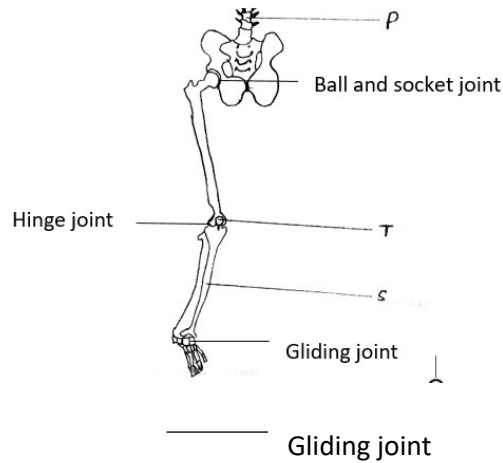
- Enzymes

e) It oxidizes the stored food in the seed to give energy for growth/synthesis of new materials;

(ANY TWO)

4. a) Appendicular;

b)



c) S – Tibia

T – Patella

P – Lumbar vertebrae

d) – vertebrae

- Pelvis

5. G - Gene for Purple

g – Gene for white

a) Parental phenotype

purple grains

purple grains

Parental Genotype

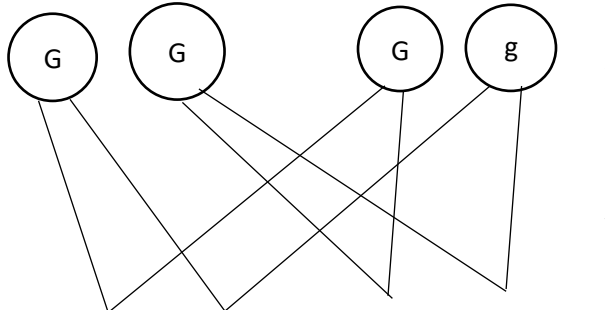
GG

X

Gg

;

Gametes



F1

GG

Gg

GG

Gg

;

b) All purple colored grained maize plants.

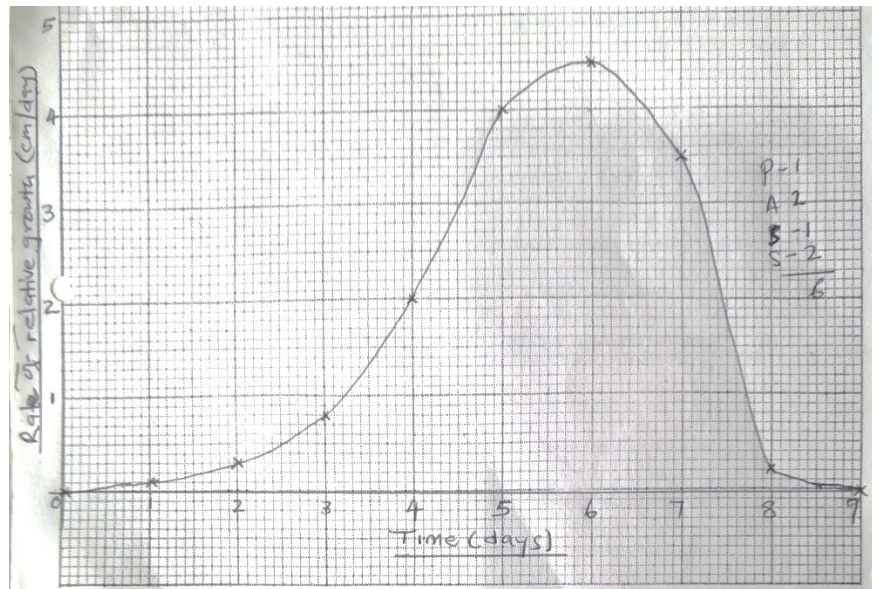
c) Deliberate modification of characteristics of an organism by manipulating the DNA / Gene, by transferring genes from one organism to another;

d) Phenotypic ratio; 3 smooth seed coat : 1 wrinkled seed coat

Seeds with wrinkled coats = $\frac{1}{4}$ X 14640;

= 3660;

6a



b) -Supports the leaf in position to trap light for photosynthesis;

- Contains xylem tissue to transport water and dissolved mineral salts to the leaf for photosynthesis, and phloem to transport synthesized food to the rest parts of a plant;

c) – Dense cytoplasm;

-Thin cell wall;

- Numerous mitochondria;

-Very small / No sap vacuole;

di) 2-5 There is a fast growth rate; because the leaf is very young; and cells are actively dividing and elongating;

ii) 6-8 There is reducing rate or relative growth; of the petiole. This is because the cells of the petiole/leaf are no longer dividing and elongating; instead the cells are becoming differentiated;

iii) 8-9 Growth ceases; /very little growth because all cells are differentiated; and has formed permanent tissues;

e) Primary growth takes place at shoot tip and root tip leading to increase in length due to activity of apical meristems;

Secondary growth leads to increase in girth in stems due to activity of lateral meristems / vascular cambium;

7. The flowers have the following features:

Insect pollination / Entomophilous flowers

- Are scented to attract insects
- Have small sticky, stigma that occur inside the flower for pollen grains to stick on it.
- Have nectaries to secrete nectar; nectar acts as a bait to attract insects
- Have nectar guides to guide the insects to the nectaries.
- Have special shaped corolla to provide landing platform i.e. tubular or funnel shaped corolla to increase chance of contact by insects.
- Large / heavy and rough / sticky / spiny / spiky pollen grains which stick on the body of insects on stigma.
- Large; conspicuous flowers with brightly colored petal, bracts or inflorescence to attract insects.
- Anthers are small and firmly attached to filament to ensure insect brush against the anthers as they crawl into the flower hence collect as many pollen grains.
- Stigmas are small, sticky and occur inside the flower, so that pollen grain from insect body can stick onto it.
- Another's are situated inside the flower to ensure that they are into contact with the insects.
- Mimicry to attract insects / flowers mimic female insects which attract male insects for mating e.g orchids.

N/B- 1 mark per point

-Max 10mks

Wind pollinated / Anemophilous flowers

- Anthers and stigma hang outside the flowers to increase chances of pollination; style / filament is long to expose stigma / anthers.

- Stigma is hairy / feathery / branched / long to increase surface area over which pollen grains land / to trap pollen grains.
- Pollen grains are smooth / dry / light / small to be easily carried by wind; large amount of pollen grains to increase chances of pollination.
- Flowers are small with inconspicuous petals, bracts or inflorescence.
- Flowers not scented and lack nectar.
- Anthers are large and loosely attached to flexible filaments to enable them sway easily to release pollen grains. This ensures that pollen grains released readily when wind blows.
- Pollen grains may have structures which contain air to increase buoyancy, flowers have long stalks holding them out in the wind.

Max 10mks

6. a) Temperature; PH value; co-factors; enzyme and co-enzymes; enzyme concentration; substrate concentration; metabolic poison / inhibitors; **Max 6mks**

b) - **Temperature**- increase in temperature increases rate of enzymatic activity; up to an optimum where enzymes work at best hence maximum / highest rate of reaction; low temperature makes the enzymes less active; high temperatures above 40⁰c denatures enzymes; enzymatic activity reduces and eventually stops;

- **PH** – Enzymes work best at optimum PH; extreme PH denatures enzymes;

Some enzymes act best in acidic or basic medium while others work best at neutral pH;

Optimum PH should be maintained.

- **Enzyme concentration** – Increase in concentration increases enzymatic activity as there is more active sites; to combine with substrate hence an increase in reaction;
- **Co-enzymes** – activates enzymes; increasing rate of activity;
- **Substrate concentration** – increase in substrate concentration increases enzymatic activity; up to certain level where enzymes become a limiting factor;
- **Inhibitors** – They compete with substrate for active sites or combines permanently with active sites of enzymes; They slow down or stop the rate of reaction;

Max 14mks

