



10.

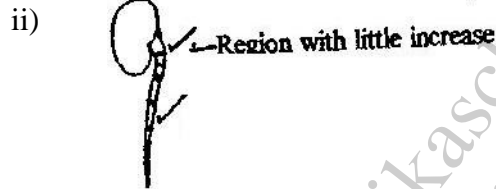
Classes	Organisms	Reasons
Insecta	Praying Mantis	3 body parts
	Tsetse fly	3 pairs of legs
Myriapoda	Centipede	Many segments
	Millipede	Many legs
Arachnida	Tick	2 body parts
	Spider,	4 parts.

Rej; if mixed Acc; it its one and correct.

11. a) Most enzymes in the body function within a narrow range of temperature;  
High temperature denature enzymes  
Low temperature inactive /inhibit enzymes

- b) Sugar in a raw material for respiration, hence less energy, available to body/low/rate of metabolism.

- 12.a) i) -Region of elongation (rapid) growth in a root.  
-Region with more increase ink mark  
-To provide moisture/water for growth (germination)



Region with more increase ink (mark)

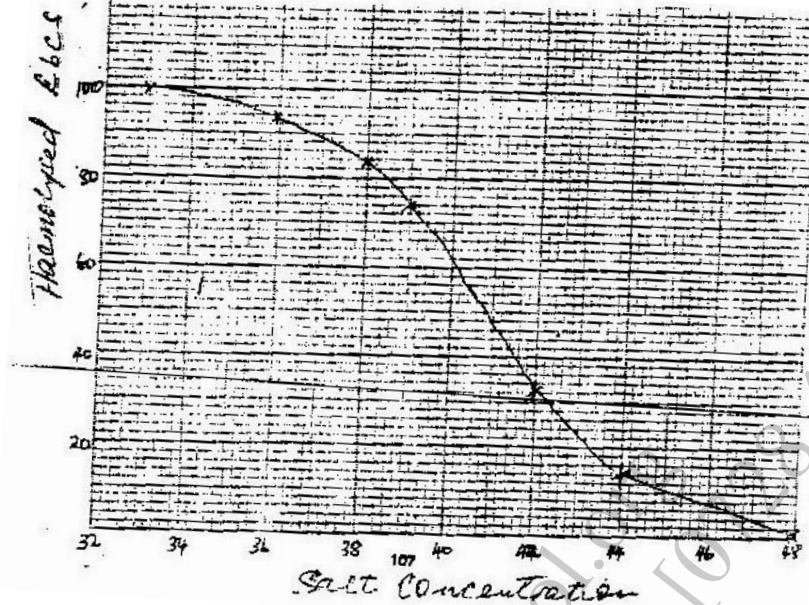
- iii) To provide moisture/water for growth (germination)
- b) i) Oxygen  
Oxidation of stored food; to provide energy (for germination)
- ii) Cotyledons  
Store food necessary for germination; protecting the plumule.

- 13 a) A community consists of all plants and animals (organisms of different species in a habitat interacting with each other.
- b) Use the capture and recapture methods; Catch the grasshoppers count and mark using permanent ink; record and release; and allow time 1 to 2 hours; recapture and count the marked and the unmarked; total population is equal to the number of marked and unmarked grasshoppers in the second sample multiplied by number marked grasshoppers in the first sample; divided by the number of grasshoppers marked in the second sample that were recaptured.

14. a) Trypanosome
- b) i) Locomotion  
ii)
- c) Sleeping sickness/trypanosomiasis
- d) -Orally ingested including boring through bites  
-Sexually; cuts and wounds (contaminated) needles syringes/surgical instruments; contaminated blood transfusion.

SECTION C 40 MARKS)

15. a) (i)



ii) 0.402; 0.403; 0.404;  $\pm 0.002$

iii) 9-10-11%

b) Account for the results obtained at:

(i) 0.33 percent salt contraction.

Less concentration // hypotonic // dilute than blood cells cytoplasm/ red blood cells; water is drawn in by osmosis the cells swells and eventually burst.

(ii) 0.48

(ii) 0.48 percent salt concentration.

Concentration of cytoplasm same as concentration of salt solution/isotonic; therefore no net movement of water; hence no heomolysis.

c) Percentage of cells haemolysed would still be zero? Becomes turgid; but does not burst; due to the cell wall.

d) The cells would absorb water due to osmosis, swell and become turgid. The cell sap move conc. than surrounding water gate into the cell by osmosis; the cell swells/becomes turgid; but does not burst due to the cell wall

16. Muscles of diaphragm contract; causing the diaphragm to flatten (from dome position). The external intercostals muscles contract internal intercostals muscles relax pulling the ribcage upward/forward and outward in man.

These movements increases the volume of the thoracic cavity; reducing the pressure; of the thoracic cavity; compared to atmospheric pressure; this causes the atmospheric air to rush into the lungs.

(Through the nostrils, trachea bronchioles and alveoli).

b)

Theory- photosynthesis

Guard cells have chloroplasts; in the presence of light; photosynthesis occurs in guard cells, producing sugar in guard cells; osmotic pressure increases/osmotic potential lowers; water from neighboring /adjacent cells enter into guard cells; causing turgidity of guard cells; causing turgidity of guard cells.

Theory 1.

Guard cells have chloroplasts; in the presence of light photosynthesis occur in the guard cells of stomata; producing in the guard cells; osmotic pressure increases/lowers osmotic potential water from the neighboring /adjacent cells, enter into guard cells; causing turgidity of guard cells .

The inner walls of the guard cells are thicker than outer walls; so during turgidity the inner walls stretch more; causing the guard cells to bulge outward; stomata opens.

Theory 2.

Guard cells have chloroplasts (Day) in light; photosynthesis occurs in the leaf/guard cells lowering the CO<sub>2</sub> concentrations; this increases PH/alkalinity which triggers of enzymatic conversion of starch to sugar (glucose); leading to low osmotic potential/ increased osmotic pressure in guard cells; guard cells absorb water from epidermal cells; thus becoming turgid; the inner walls are thicker than the outer walls; outer walls stretch more than inner walls; causing guard cells to bulge outwards, stomata opens;

In the absence of light (night); no photosynthesis; CO<sub>2</sub> concentration increases due to respiration; PH lowered/ acidity increases; sugar converted to starch; osmotic pressure lowered/ osmotic potential increases; guard cells lose water to adjacent epidermal cell becoming flaccid; stomata close.

Day low H<sup>+</sup> high PH opens stomata.

Starch glucose.

Theory 3

Guard cells have chloroplasts; in light ATP produced; the energy drives K<sup>+</sup> ions from adjacent epidermal cells into guard cells; accumulation of K<sup>+</sup> raises osmotic pressure (lower osmotic potential) of guard cells; guard cells absorb water from adjacent epidermal cells; becoming turgid; the inner walls are thicker than the outer walls so outer walls stretch more than inner walls causing guard cells to bulge outward. Stomata opens.

In the absence of light (night ) ATP rapidly decreases; no energy of potassium +ions pump ion; migrate by diffusion from guard cells to adjacent epidermal cells; become flaccid; the thinner outer walls of guard cells shrink (OWWTE; thicker inner walls reduces their curvature/OWTTE; thus closing the stomata.

17. Sulphur based chemicals e.g. sulphure dioxide gas  $H_2S$   $Cl_2$   $HCl_2$  produced by (food preventing) industries /sewages matter, Affect gaseous exchange/makes acid rain /damages plants leaves.

Acc. Pesticides, Herbicides, Insecticides, Acaricides, paint sprays, Aerosols

CFCs sprayed to control (plant) disease and pests, also affect respiratory organs of animals; the chemicals are residuals and persistent (not easily) broken down deplete.

Ozone layers; smoke/fumes produced in areas with (heavy) industries and (high density of motor vehicles / fire which burn fuel/oils wood coal; These visibility; fumes also settle on leaves and stop photosynthesis (excessive) production of carbon dioxide causes the green house effect/Temp. inversion as a result of heating in lower layers of atmosphere; sound /noise produced incessantly b machines/ heavy vehicles/aircraft; affects hearing in animals; Dust, industrial production of (cement) generates dust; which finally settles on plants leaves limiting photosynthesis; removal of vegetation/cutting of trees; interferes with.

The carbon cycle; radioactive emissions; from nuclear reactors/mines/ x-rays machines bombs cause mutation/cancer/death.

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