

2001 HIGHER SCHOOL CERTIFICATE EXAMINATION

Biology

Section I – Part B (continued)

Marks

Question 19 (6 marks)

In your Biology course, you performed a first-hand investigation to gather information about structures in plants that assist in the conservation of water.

(a) Describe the procedure you followed.

4

Producing our own slides of plant material - leaves - to study the structure and distribution of stomata. By carefully scraping the surfaces of leaves with a sharp utensil and placing the scraped material onto glass slides, we could then study under a light microscope the structure and distribution of stomata which control the amount of moisture lost by evapotranspiration (by opening or closing) and hence water conservation.

(b) Identify TWO safe work practices needed during this investigation.

2

Students must be careful when handling with the sharp utensil to prevent injury.
Students must also be careful when handling with glass slides, preventing breakage and injury associated.

Marks

Question 20 (7 marks)

Name ONE example of an Australian endothermic animal and ONE example of an Australian ectothermic animal, and summarise their responses to the following environmental changes. Give your answer in the form of a table.

7

Change 1: The ambient temperature rises well above the average daily temperature range.

Change 2: The ambient temperature drops well below the average daily temperature range.

Endothermic animal: ...kangaroo (Rec).....

Ectothermic animal: ...Brown snake.....

| | Rec Kangaroo | Brown snake |
|---|---|--|
| <p><u>CHANGE 1</u> Ambient temp rises above daily temp range</p> | <ul style="list-style-type: none"> * takes shade under trees to reduce exposure to sun. pants → sweat * walks at night or cooler parts of day to eat * licks patch of skin on forearm to assist in evaporation - sweat so as to not lose excessive amounts | <ul style="list-style-type: none"> * flattens body on rocks or hard surfaces to increase surface area exposure to sun * activity reduced, so body warms up |
| <p><u>CHANGE 2</u> Ambient temp drops below daily temp range</p> | <ul style="list-style-type: none"> * metabolic activity ↑ * blood flow redirected to lower parts * muscular activity ↑ → shivering to warm * takes refuge | <ul style="list-style-type: none"> * rolls up in ball to reduce exposure to sun * takes cover in warm places eg hole * hypernatation |

Question 21 (4 marks)

Sutton, Boveri and Morgan worked in the field of genetics.

4

Describe the contribution made by TWO of these scientists to the understanding of the chromosomal nature of inheritance.

Sutton and Boveri are the 2 scientists credited with the findings of the chromosomal theory of inheritance. They found ~~to~~ (individually) that chromosomes were responsible for inherited characteristics. They also individually found that chromosomes occur in pairs. They further proved Mendel's theory of dominant and recessive genes.