

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.

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1. Several plant species with various adaptations were collected.
2. Each was observed under a microscope and compared.
3. The leaves with the tougher layers/cuticle were cut with a scalpel to examine how tough they were.

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

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1. Be careful of the spikey leaves on some plants & don't place plants in mouth.
2. Be careful not to cut yourself with the scalpel.

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: Red Kangaroo

Ectothermic animal: Desert lizard (eg. Bearded Dragon)

ANIMAL	AMBIENT TEMPERATURE RISES WELL ABOVE AVERAGE DAILY TEMPERATURE RANGE	AMBIENT TEMPERATURE DROPS WELL BELOW AVERAGE DAILY TEMPERATURE RANGE
Red Kangaroo	Licks forelimbs where network of capillaries is dense to increase surface area of blood to skin, which then radiates out of skin.	Fat reserves of animal insulate body from warmth.
Desert lizard (eg. Bearded Dragon)	Raises head vertically to sun to reduce surface area exposed to the sun's rays.	Spreads its body flat on the ground to absorb the heat from the ground as well as increase surface area of body exposed to what light is available from sun.

Table: Responses of endothermic and exothermic animals to changes in temperature of environment.

Question 21 (4 marks)

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

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

- * Boveri - performed experiments on sea urchins. Found that a full set of chromosomes is needed for normal development of all organisms.
- * Morgan - performed experiments by crossing red and white eyed male and female flies. His results could not be explained by Mendel's theories. Morgan explained sex linked inheritance. All genes on X chromosome said to be sex linked.