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**

1) Collected a variety of plant leaves around school
2) Having about 5 types (inc: gum tree, causurinas) and some slides, observed specimens and drew results
3) Slides viewed under a microscope - included sunken stomata to reduce evaporation ∴ reduce water loss.
4) Observed leaves (specimen) under magnifying glass - drew and recorded features such as pine-like leaves
5) Compared and discussed results in classroom aided with textual information on structures.

(b) Identify TWO safe work practices needed during this investigation. **2**

1) When collecting leaves from trees - careful that it does not have any poisonous insects on it. eg) spiders, spitfires.
2) When dealing with microscopes + slides - no running & (and ensure) that all people are spaced out not cramped up. Breakages to slide and equipment can lead to cuts (slides are made from glass.)

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 Rat

Ectothermic animal: Frilled Lizard

Change	Kangaroo Rat	Frilled Lizard
#1	Sleeps in its burrow where tempelature is constantly 10°C lower than outside (is nocturnal) Temporarily controls heat by dribbling saliva (evaporation of saliva cools it)	Shelters in trees Raises its frill and flaps it to create a cooling sensation (much like elephant ears) Sleeps (is nocturnal)
#2	May curl up to conserve heat Hair may become raised to trap a layer of warm air surrounding the body. Shivering (The internal temperature will remain constant due to homeostasis)	Raises the very thin frill and holds it to the sun (it is well-supplied with blood vessels) to absorb heat Lies in the sun (basking)

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.

Boveri showed, using sea urchins, that a complete set of chromosomes is needed for normal development. Sutton used grasshopper testi cells to show some of the characteristics and behavioural patterns of chromosomes, such as that they occur in homologous pairs which function independantly of other pairs and that they segregate at recombine. He idetified chromosomes as the 'factors' discussed by Mendel in his earlier research into inheritance of characteristics.

Morgan