

May 2009 Session
MARKING SCHEME PAPER 1
BIOLOGY

1.

COLUMN A			COLUMN B
1	Amylase	4	transported in phloem from leaves to roots
2	Cellulose	9	found deposited in the cell walls of xylem vessels
3	Haemoglobin	7	a hormone involved in controlling the level of glucose in blood
4	Sucrose	6	carbohydrate stored in plants
5	Glucose	8	made up of fatty acids and glycerol
6	Starch	10	a product of anaerobic respiration
7	Insulin	3	transports oxygen in blood
8	Fats/oils	2	major component of cell walls of phloem cells
9	Lignin	5	broken down in aerobic respiration to carbon dioxide, water and energy
10	Lactic acid	1	digests starch to maltose

1 mark each
(Total: 10 marks)

2.

- a i to keep a constant temperature 1 mark
 ii 37⁰C is the optimum temperature for pepsin 1 mark

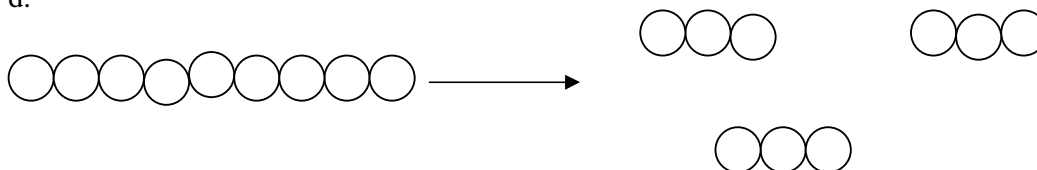
b

- (i) Enzyme/pepsin was **not present** 1 mark
 (ii) Pepsin placed in tube D was in the presence of hydrochloric acid, therefore it worked as it was in an acidic pH/it had optimum pH to work in.

1 mark
 In tube B water was present therefore pH was neutral. So pepsin did not work.
 1 mark

- c Egg white will NOT be digested 1 mark
 NaOH is alkaline/basic therefore pH is not optimum as a result pepsin will not work.
2 marks

d.



2 marks

(Do NOT accept individual amino acids represented as single circles or dipeptides represented as a pair of circles)

(Total: 10 marks)

3a

A:	Waxy cuticle	1 mark
B:	Upper epidermis/epidermal cell	1 mark
C:	Palisade mesophyll cell	1 mark
D:	Spongy mesophyll/cell	1 mark
E:	Guard Cell	1 mark

b

- i. It reduces water loss 1 mark
- ii Allows gaseous exchange/allows plant to take in Carbon Dioxide/releases oxygen 1 mark

c

- i Photosynthesis 1 mark
- ii Compensation point 1 mark

d At point Z no carbon dioxide is absorbed as the rate of respiration is equal to the rate of photosynthesis. Therefore carbon dioxide produced in respiration inside the leaf is used by the cells to carry out photosynthesis. So the plant does not take up carbon dioxide from the atmosphere.

3 marks

(Total: 12 marks)

4a

Result observed:

After 2 days egg A swells up while egg B shrinks. 2 marks

Conclusion:

Water diffused into egg A from a higher water concentration to a lower water concentration) by the process of osmosis; as a result egg becomes swollen.

Water diffused out of egg B(from a higher water concentration to a lower water concentration) by osmosis; consequently egg B shrinks. 2 marks

b

Result observed:

In gas jar A the burning splint goes out immediately but in gas jar B the burning splint continues to burn for a few seconds. 2 marks

Conclusion:

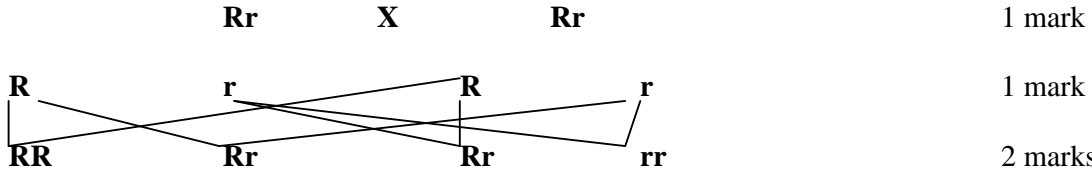
In gas jar A there is less oxygen because the germinating seeds have used up all the available oxygen. Respiration taking place only in A but not in B. 2 marks

(Total: 8 marks)

5

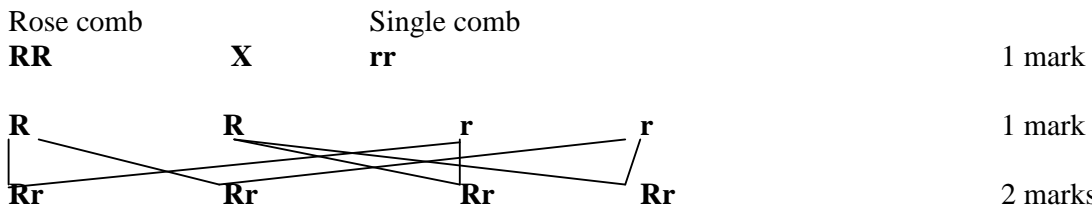
a Alleles are different forms of a gene that code for alternatives such as blue (eye colour) or brown (eye colour). 2 marks

b. The rose comb fowls were heterozygous.



25% of offspring were single comb fowls (rr)

c



100% rose comb fowls (heterozygous)

(Total: 10 marks)

6a

i Sweat gland 1 mark

ii In hot weather sweat is released. Sweat evaporates from the skin surface bringing about a cooling effect. 2 marks

b

i Muscle X is contracted. 1 mark

Therefore hairs are raised, trapping more air in between, providing a thicker insulating layer; consequently less heat is lost. 2 marks

ii Muscle X is relaxed. 1 mark

Therefore hairs are lowered trapping less air in between, providing a thinner insulating layer. 2 marks

c

i Blubber is an effective insulating layer as it is made up of fat. 2 marks

(DO NOT ACCEPT : thickness of blubber as an effective means to insulation)

ii Energy store/ buoyancy 1 mark

(Total: 12 marks)

7
a

NERVOUS SYSTEM	HORMONAL SYSTEM
Long term changes	Short term changes
Rapid transmission and response	Slower transmission and slow acting
Electrical transmission	Chemical hormonal transmission
Specific pathway	Pathway not specific
Localised response	Widespread response

Any TWO differences. 2 marks each

b

A CEREBRUM (CEREBRAL HEMISPHERES) 1 mark
(do NOT accept cerebral cortex)

C CEREBELLUM 1 mark

D MEDULLA OBLONGATA 1 mark

E PITUITARY GLAND 1 mark

c (i) Cerebellum (Accept **C**) 1 mark

(ii) motor area within cerebrum (Accept **A**) 1 mark

(If cerebrum only is mentioned still award 1 mark)

(Total: 10 marks)

8a

Drawing of organism	Phylum	Characteristic feature of phylum
STORK	VERTEBRATE	Presence of vertebral column
FLARWORM	FLATWORMS /PLATYHELMITHES	flattened body
JELLYFISH	COELENTERATE	Soft hollow body with single opening, surrounded by tentacles; armed with stinging cells.

CRAB	ARTHROPOD	Segmented body, covered by a hard exoskeleton(cuticle);have jointed appendages (Accept bilateral symmetry)
CRANESBILL	ANGIOSPERM	Plants whose seeds are formed within the ovaries of flowers. Produce flowers.
SCOTS PINE	GYMNOSPERM (CONIFERS)	Green plants with naked seeds contained in cones

(1 mark each – 8 marks)

b

i complete metamorphosis

1 mark

ii chemical pest control/pesticides/insecticides (Any ONE)

1 mark

(Total: 10 marks)

9

a Once an organism becomes extinct, it is permanently eradicated/removed from the ecosystem. An extinct organism can never be found alive again in any region of the world.

(If students mention: *tigers will never be seen again*. Award only 1 mark)

2 marks

b Trees absorb carbon dioxide from the atmosphere for the process of photosynthesis; thus afforestation/planting more trees is beneficial to reduce the increased amounts of carbon dioxide in the atmosphere. This in turn serves to limit/control the greenhouse effect.

4 marks

c Most rivers are becoming polluted by various debris thrown into the river water. Furthermore most organisms (like fish) in rivers are experiencing Low oxygen amounts. These low levels of oxygen are caused by eutrophication. This process is caused by high levels of mineral nutrients on which green algae feed and as a result these algae multiply very rapidly to form dense populations. As a result rivers support a low diversity of organisms.

4 marks

(Total: 10 marks)

10a

i Clam/mussel (Any ONE) 1 mark

ii crabs/barnacles (Any ONE) 1 mark

b

(i) Maintains a high rate of population increase/increase in number of starfish
1 mark

(ii) Reduction in Handfish population/increase in starfish population or equivalent
1 mark

c Ciliate can become a pest itself/ many other marine organisms in Tasmanian waters could serve as hosts to the ciliate. (Any ONE or equivalent) 2 marks

d

i amurensis 1 mark

ii Orchitophyra 1 mark

(Total: 8 marks)