JUNIOR LYCEUM ANNUAL EXAMINATIONS 2009

Directorate for Quality and Standards in Education
Educational Assessment Unit

BIOLOGY – FORM III
TIME: 1H 30MIN

NAME: _____ CLASS: _____

Question No.	Section A								Section B				
	1	2	3	4	5	6	7	8	1	2	3	4	5
Max mark	5	8	9	6	7	7	7	6	15	15	15	15	15
Actual mark													TOTAL MARK

85% Theory Paper	15% Practical	100% Final Score

Section A
Answer all questions in this Section.

1. Write the term that best fits **each** of the following statements:

a. a tough flexible carbohydrate material which forms the cell wall around plant cells

_____

b. the thread-like parts of mould _____

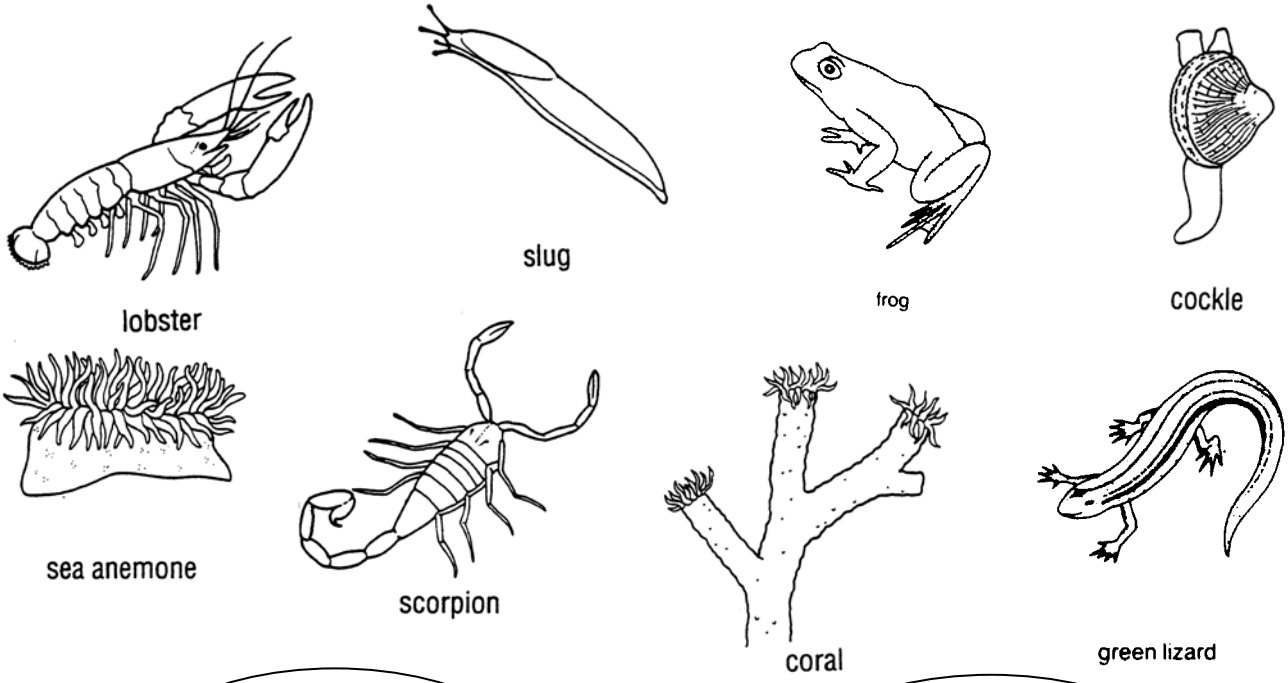
c. an air filled structure found in most fish _____

d. swellings on the roots of leguminous plants _____

e. the whip-like structure that propels a bacterium cell _____

(1, 1, 1, 1, 1 mark)
Total 5 marks

2. Look at the following diagrams and write the names of the organisms in the correct group below.



Chordates

Molluscs

Arthropods

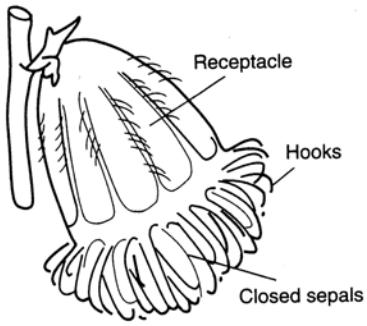
Coelenterates

(2, 2, 2, 2 marks)
Total 8 marks

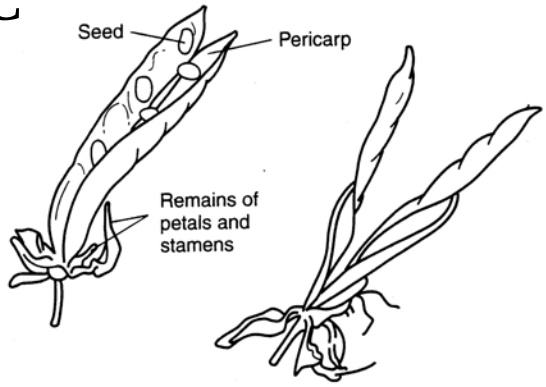
3a. The following diagram shows three (**A**, **B** and **C**) different types of seeds. Observe the diagrams and in the table below list:
(i) the method of seed dispersal
(ii) ONE adaptation of the seed that helps in its dispersal.

A

B



C



Seed	Type of Dispersal	One Adaptation
A		
B		
C		

(3, 3 marks)

b. Distinguish between epigeal and hypogeal germination.

_____

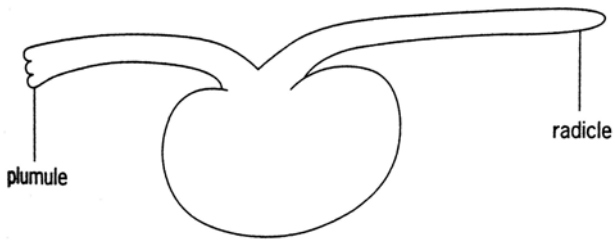
_____ (2 marks)

c. Write the term that describes a plant containing seeds with one cotyledon.

_____ (1 mark)

Total 9 marks

4. A young broad bean seedling was placed horizontally and given conditions for [illegible] uniform light intensity.



a. In the space below draw a diagram to show how you would expect the broad bean seedling to look 3 days after.

(2 marks)

b. What name is given to the response shown by:

(i) the radicle _____

(ii) the plumule. _____ (1, 1 mark)

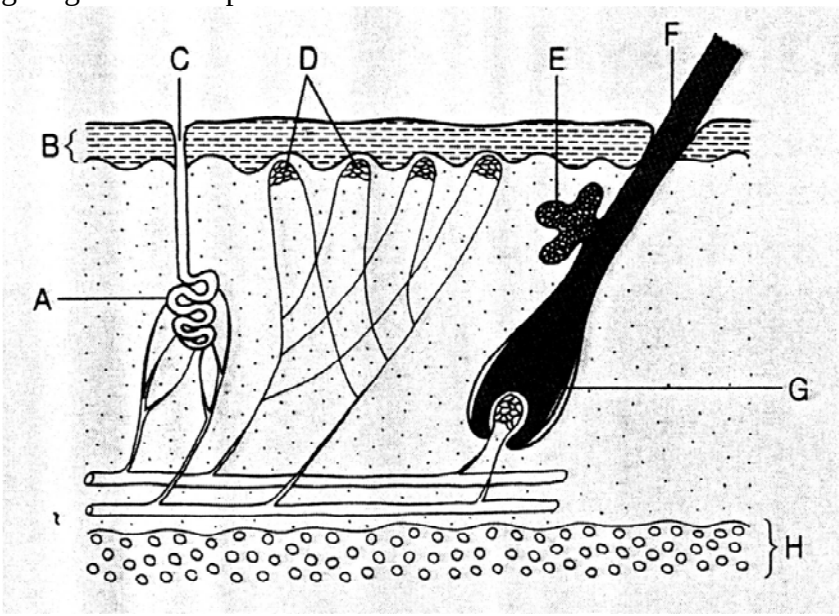
c. A biology student noticed the stem of an ivy plant growing out of a room from a tiny gap under the door. Explain.

_____

_____ (2 marks)

Total 6 marks

5a. The following diagram shows part of the human skin.



Write the letter of the:

(i) sebaceous gland _____

(ii) epidermis _____

(iii) sweat gland _____ (1, 1, 1 mark)

b. List ONE change that takes place in the part labelled **D** when the person is waiting outside on a cold morning.

_____

_____ (2 marks)

c. Write the letter of the part you would expect to be thicker in wild animals living in a cold region like the Arctic. Give a reason for your answer.

_____

_____ (2 marks)

Total 7 marks

6. Two main types of soil include sandy soil and clay soil.

a. In the following table write the type of soil that best fits **each** description.

Description	Type of Soil
• Soil is loose, light and easy to dig	
• Soil holds on to water and nutrients very well	
• Lime is often added to this type of soil	
• Soil contains plenty of air	

(1, 1, 1, 1 mark)

b. Give TWO reasons why a gardener adds humus to sandy soil in a garden.

_____

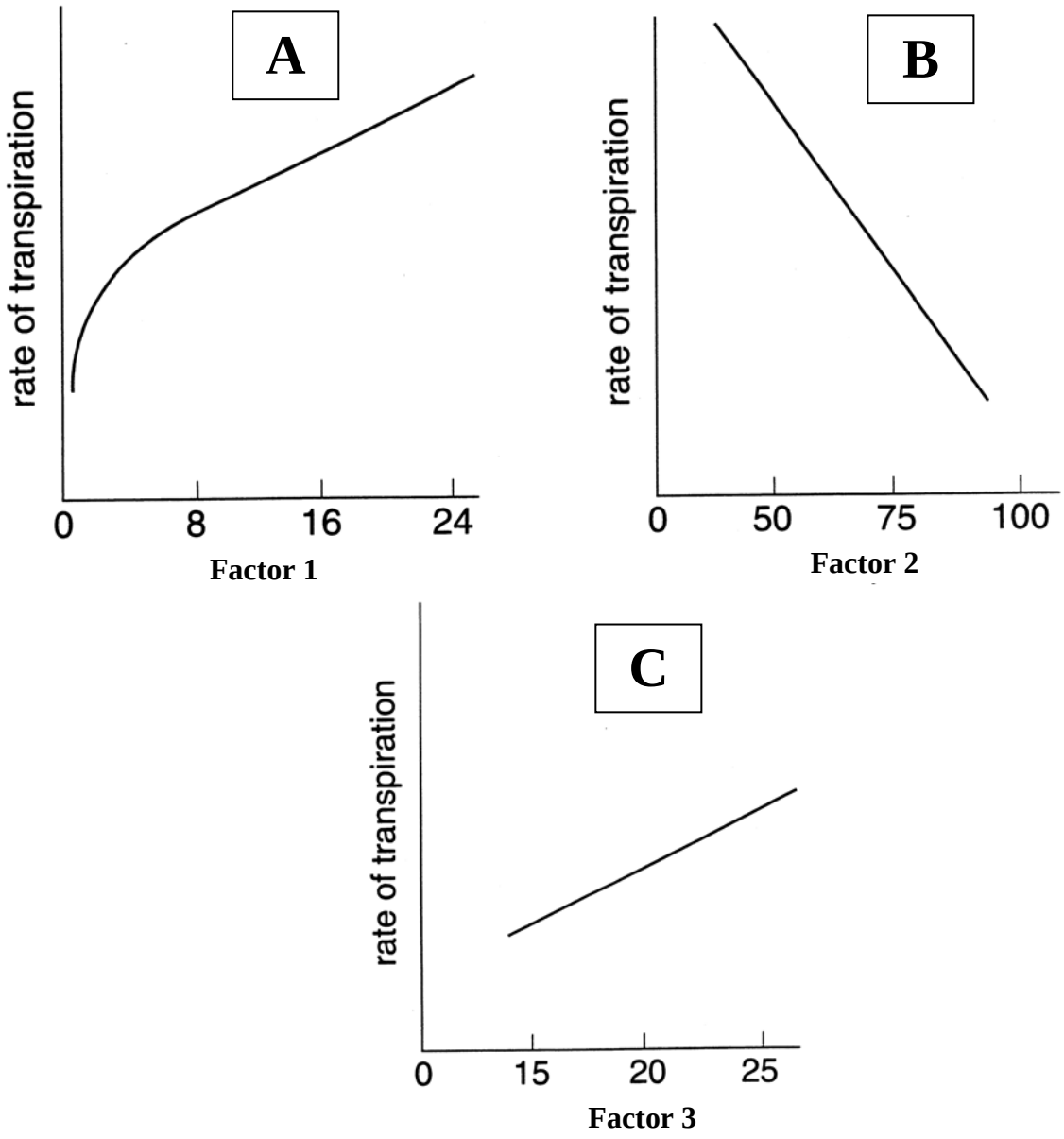
_____(2 marks)

c. List ONE agricultural practice that increases soil erosion.

_____ (1 mark)

Total 7 marks

7. The following graphs (A, B and C) show the effect of three environmental factors o[illegible] transpiration of a potted plant.



a. Which graph shows the effect of humidity on the rate of transpiration? _____ (1 mark)

b. The pore through which water leaves the plant is the stomata.
(i) Name the cells that open or close the stomata.

_____

(ii) Most stomata close at night. Explain the benefit of this.

_____

(1, 1 mark)

c. Most plants living in hot dry environments have both shallow as well as deep roots. Explain.

_____

_____ (2 marks)

d. (i) Name the apparatus that can be used in the laboratory to measure the rate of t… of a leafy shoot.

_____

(ii) A group of biology students used the apparatus you name in d'i' to investigate a set o… environmental conditions that influence the rate of transpiration in a plant. The following table lists the three sets of environmental conditions:

	Environmental Conditions
Z:	High light intensity and High temperature
Y:	Dark and windy
Z:	Dark and low humidity

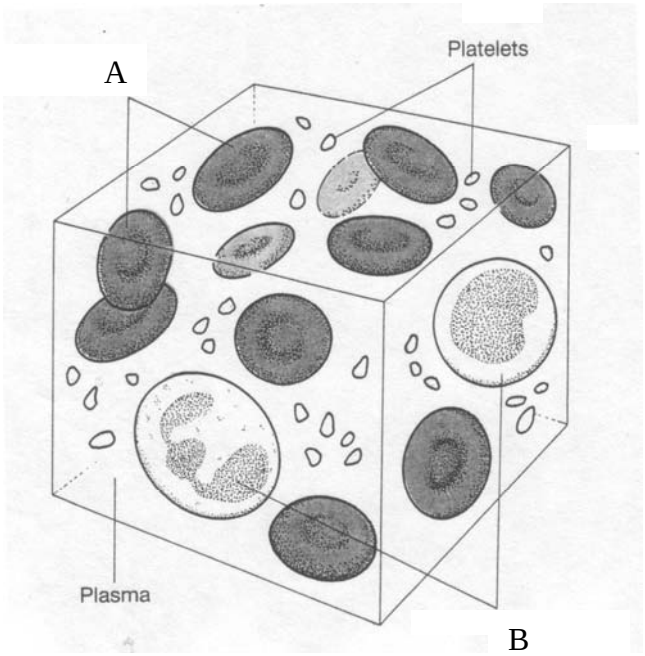
In which of the three conditions would you expect the rate of transpiration to be the lowest?

_____

(1, 1 mark)

Total 7 marks

8. The following diagram shows human blood.



a. Name cell

A: _____

B: _____ (1, 1 mark)

b. Give ONE structural difference between cell A and cell B.

_____

_____ (2 marks)

c. Blood is a tissue. Define the term tissue.

_____ (1 mark)

d. Describe what happens to the number of cell A, in a person who climbs up a high mountain where there is lack of oxygen.

_____ (1 mark)

Total 6 marks

Section B

Answer question 1 and choose TWO others. This section carries 45 marks. Write the ans for section B on a foolscap.

1. Read the following passage and then answer the questions that follow.

The drone-fly is not a bee.

The drone-fly is one of several species of hoverflies that can be found in the Maltese Islands. These flies resemble bees and wasps in appearance and behaviour and manage to confuse predators that mistake them for the real thing and so leave them alone even though they do not have stings. This defence strategy is known as mimicry. The drone-fly, known in Maltese as *dubbiena dakar* is very common and can often be seen on flowers or sunbathing in open areas. The eggs are laid in stagnant water. The larva of the drone fly looks like the larva of the common housefly. The drone flies visit flowers for nectar and pollen.

a. From the passage above choose the correct term that matches **each** of the following descriptions:
   (i) a group of organisms within a genus
   (ii) the stage between the egg and the adult in the life cycle of certain organisms
   (iii) an animal that hunts another animal for its food. (1, 1, 1 mark)

b. Distinguish between pollen and nectar. (2 marks)

c. List TWO other defence mechanisms (besides mimicry) that are used by some animals to avoid being caught. (2 marks)

d. Butterflies undergo complete metamorphosis. Mention ONE way in which complete metamorphosis is different from incomplete metamorphosis. (2 marks)

e. The larva of the drone-fly feeds on bacteria.
   (i) Explain how bacteria can survive bad conditions such as drought.
   (ii) In good conditions bacteria reproduce extremely quickly. Describe ONE possible problem caused by their rapid rate of reproduction.
   (iii) List TWO ways in which a bacterial cell differs from a typical animal cell. (2, 2, 2 marks)

Total 15 marks

2a. (i) List TWO parts in the cell that provide support to a plant cell.
   (ii) Name ONE cell structure that you would not expect to find in a root cell. (2, 1 mark)

b. Plants wilt if they are not watered regularly. Explain. (2 marks)

c. A biology student had a light microscope with $\times 5$ and $\times 10$ eyepiece lenses and objective lenses of $\times 10$ and $\times 40$. Work out what is the highest magnification that the student can achieve. (show your working). (2 marks)

d. Explain why most specimens of cells are stained before they are examined under the light microscope. (2 marks)

e. List TWO organs of a flowering plant and write the function of **each** organ you mention. (4 marks)

f. Farmers in Africa and South America often spray powerful insecticides to kill [illegible] of locusts. Explain. (3 marks)

Total 15 [illegible]

3. Give a biological explanation for **each** of the following statements:

a. Protists such as the Amoeba contain both food vacuoles as well as contractile vacuoles. (3 marks)

b. The earthworm is adapted for burrowing. (4 marks)

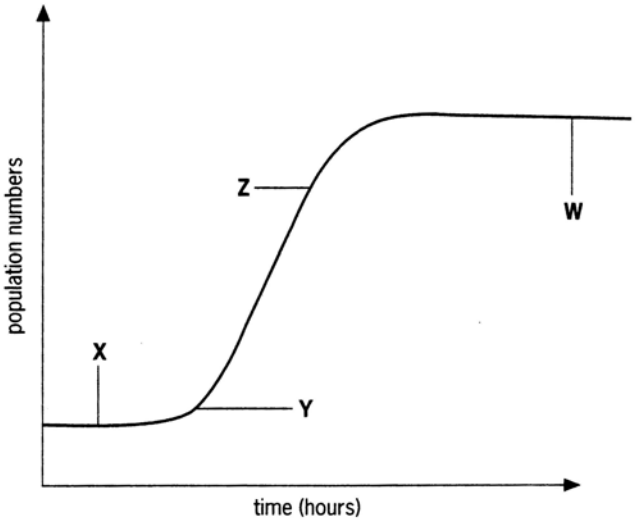
c. Insects are generally rather small. (3 marks)

d. Jellyfish sting. (3 marks)

e. A biologist cannot grow viruses on agar jelly. (2 marks)

Total 15 marks

4. The following graph shows changes in the size of a population of yeast cells growing in a glass flask containing nutrient broth with glucose as a source of food.



a. (i) Name the kingdom to which yeast belong, and list TWO other organisms in this kingdom.
(ii) Draw a labelled diagram of a yeast cell. (3, 4 marks)

b. Name the process of asexual reproduction by which yeast reproduce and list TWO advantages of it. (3 marks)

c. From the population growth graph write the letter that represents the following stages in the growth of the yeast population:
(i) the point at which the birth rate and death rate are equal
(ii) the point at which population growth is most rapid. (1, 1 mark)

d. The yeast was left in the flask for a further 24 hours. Predict what would happen to the population size of the yeast. Give a reason for your answer. (3 marks)

Total 15 marks

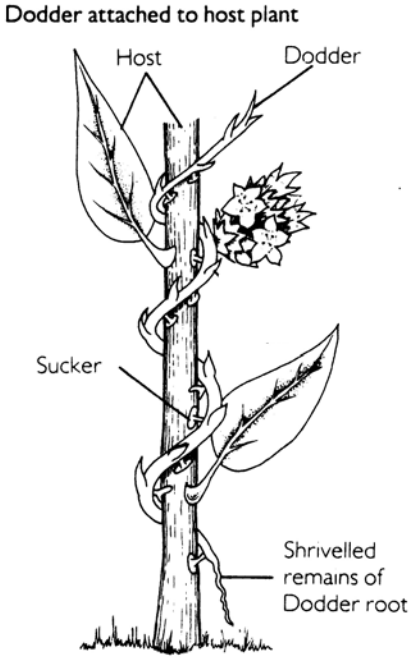
5. The following diagram shows grass flowers.

a. What type of pollination would you expect grass flowers to have?
From the diagram above give TWO pieces of evidence for your answer. (3 marks)

b. Would you expect to find nectar in grass flowers? Give a reason for your answer. (2 marks)

c. Describe what happens once pollination has taken place. (3 marks)

d. The Dodder is a parasite of nettles; it has colourless scale leaves, and suckers, as shown in the diagram below.



(i) Define the term parasite.
(ii) Explain why the leaves of the Dodder are colourless.
(iii) Why are suckers present in a Dodder plant? (2, 2, 1 mark)

e. Tapeworms are also parasites that live in their host's intestine. Tapeworms do not have a gut. Explain why tapeworms do not need a gut. (2 marks)

Total 15 marks