Code: 24/3/1

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BLATA L-BAJDA
HALF YEARLY EXAMINATIONS 2005/06

Subject: Biology Form: III Time: 1.5 hrs

Name & Surname: _____ Class: _____

Question No.	Section A							Section B				
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**	**3**	**4**	**5**
Max Mark	10	8	11	7	6	8	5	15	15	15	15	15
Actual mark												

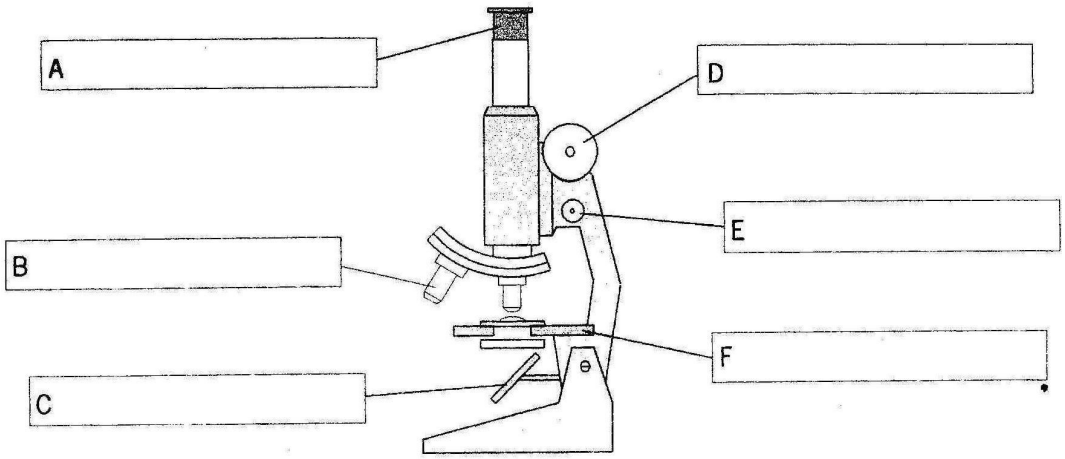
TOTAL	

	Total Marks	Marks Achieved
Section A **This section carries 55 marks. Answer all questions in the space provided.**		
1. Which vital function is described by each of the following ? A child turning into an adult _____ A predator smelling the scent of its prey _____ A bacterium dividing into two _____ A frog ingesting a fly _____ A boy sweating _____ A flower turning towards light _____ Muscle cells breaking down glycogen to obtain energy_____ A plant photosynthesizing _____ Carbon dioxide removed during breathing out _____ A plant producing seeds _____	10	
2 (a) Give the function of the following : Cell membrane Mitochondrion Nucleus Cytoplasm	4	

(b) A remote control deep-sea probe collected mud from the seabed. The mud was found to contain living cells. These cells are examined under the microscope. Suggest 4 structures which would indicate that the cells are plant cells and not animal cells.

4

3. (a) Label the following diagram of the light microscope.



6

(b) Give the function of 3 different parts of the microscope you have labelled

Name of part Function

3

(c) A cell, under a light microscope, appears to have a length of 1cm. The total magnification of the microscope is x450. What is the actual length of the cell? Show your working.

2

4 (a) In the human body there are about 20 different types of cells. Why is this better than having cells that are all exactly the same?

2

(b) Fill in the blanks using the following words :

prokaryotic organ kidney system unicellular tissue eukaryotic system multicellular

Each word may be used once, more than once, or not at all

(a) Similar cells are grouped together to form a/an _____ .

(b) A _____ is an example of an animal organ.

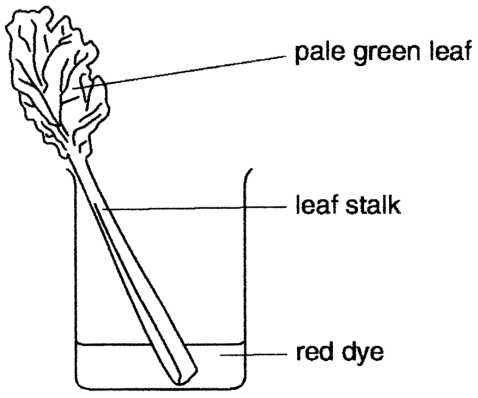
(c) Different organs working together form a _____ .

(d) Cells that have a nucleus are called _____ .

(e) An organism made up of only one cell is said to be _____ .

5

5. The following diagram shows an investigation that was set up and left for 30 hours.



At the end of this time, the leaf became red.

A student took a section from the leaf and studied some cells under the microscope. She could observe that the red dye had moved form one cell to the next.

(a) Name the process by which the dye moves from one cell to the next

1

(b) Explain how the dye moves from one cell to the next.

2

(c) Give 3 factors that could increase the rate of the process mentioned above

3

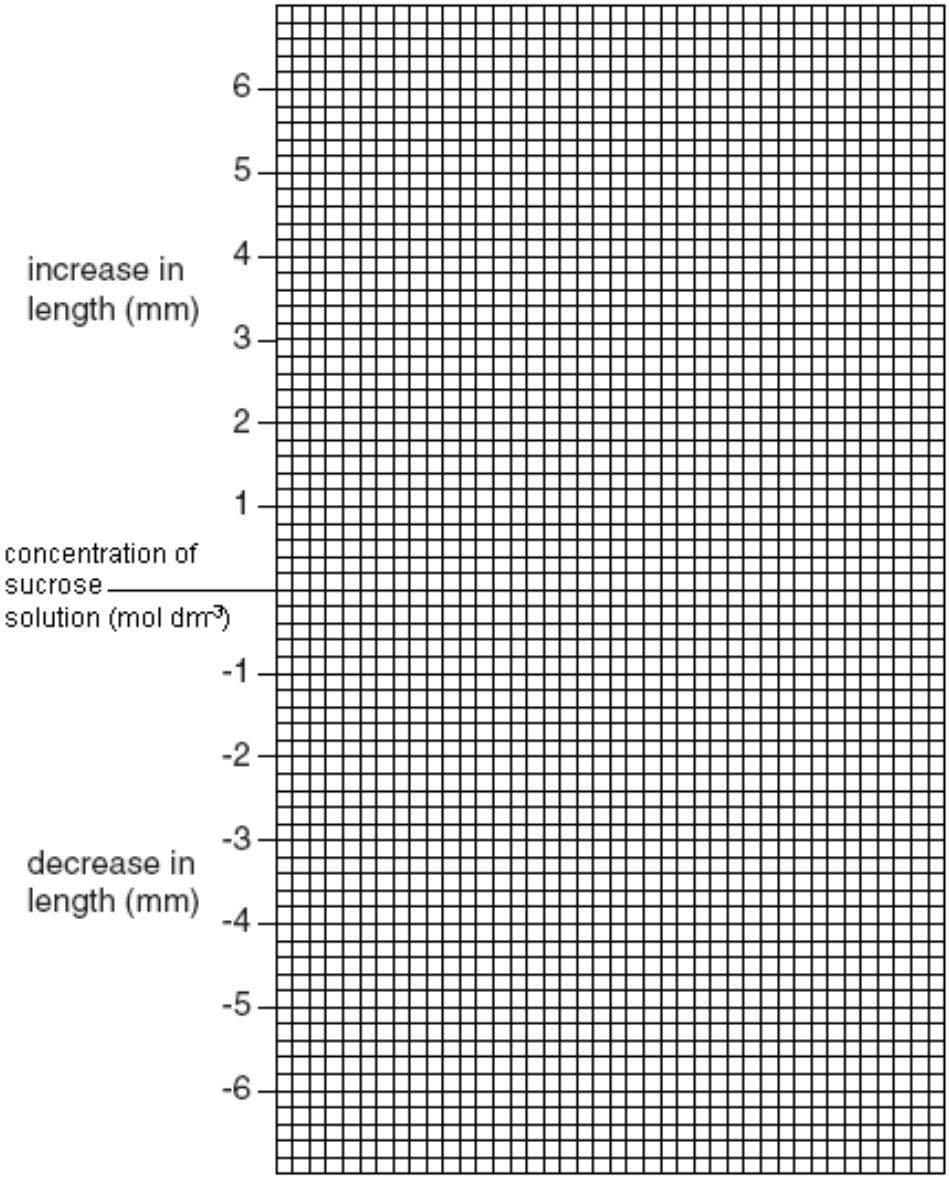
6. An experiment was carried out to investigate the effect of different concentrations of sucrose solution on the length of potato strips. 5 test-tubes were set up, each containing a different concentration of sucrose solution. Another test-tube was set up, containing distilled water.

A strip of potato tissue was placed in each tube. The strips were of equal size; they were all 70mm long and of the same width and thickness.

The strips of potato were completely covered by the solutions and were left in the test-tubes for 30 minutes. The potato strips were removed and measured. The results are shown in the following table :

concentration of sucrose solution (mol dm^{-3})	initial length (mm)	final length (mm)	change in length (mm)
0	70	73.0	
0.2	70	71.5	
0.4	70	69.0	
0.6	70	67.0	
0.8	70	66.0	
1.0	70	64.5	

(a) Plot the changes in length against the concentration of sucrose solution on the axes provided. Join the dots using straight lines.



4

(b) What conclusions can be drawn from these results ?

2

(c) Using the graph, suggest the concentration of the sucrose solution which is the most similar to the solution inside the potato cells. Explain your answer.

2

7. Match the characteristics with the corresponding invertebrate phylum. Write the name of the phylum next to the matching description.
The names of the phyla are :
Flatworms Annelids Molluscs Cnidarians Nematodes

a. Have a soft unsegmented body, with an external or internal shell. _____

b. The body is thin and has no circulatory system. Most are parasites. _____

c. Have a long thread like body, round in cross-section. May live in soil, many are parasites. _____

d. Have a sac-like body with stinging cells. Are aquatic. _____

e. Have a long segmented body with a mouth and anus. _____

5

SECTION B: Answer question <u>ONE</u> and <u>ANY OTHER TWO</u> questions on the papers provided. This question carries a total of <u>45 marks</u>.

1. ***<u>Read the following passage carefully and then answer the questions below :</u>***

In the Maltese islands there is only one species of freshwater crab. This is *Potamon fluviatile.* This species is endemic. This means it is only found on the Maltese islands and nowhere else.

The Maltese freshwater crab occurs along permanent springs. It is becoming very rare. The situation is further aggravated by senseless collecting by people. Unless protected, this species will soon become extinct.

The Painted frog, *Discoglossus pictus* is another species that is now becoming more and more rare. This is due to habitat destruction, pollution and persistent persecution.

(*Adapted form Red Data Book For The Maltese Islands edited by P.J. Schembri and J. Sultana).*

(a) The crab *Potamon fluviatile* is named using the binomial system. Explain what this means. 2

(b) Suggest 2 different factors that are contributing to a decrease in the numbers of freshwater crabs. 2

(c) The crab belongs to the phylum Arthropods. To which class does it belong to? 1

(d) There are 3 other classes in the phylum Arthropods. Which are these 3 other classes? Give an example of an organism for each class. 6

(e) To which class does the Painted frog belong to? 2

(f) Give 2 characteristics of this class. 2

Total 15 marks

2. The possible threat from the Pandemic Flu is making headlines in news.

(a) Which microbe/micro-organism causes the Pandemic Flu? 1

(b) A student claimed to have observed the Pandemic Flu microbe under the light microscope. Is this possible? Why? 2

(c) Why would antibiotics be ineffective against the microbe causing the Pandemic Flu? 1

(d) Draw a labelled diagram of a typical microbe such as the one causing the Pandemic Flu. 3

(e) Tetanus, diphteria and tuberculosis are caused by a different type of microbe. Which microbe causes these diseases? 1

(f) Give 2 beneficial uses of this type of microbe (mentioned in question 2e). 2

(g) Draw a labelled diagram to show the typical structure of the microbe mentioned in question 2e. 3

(h) How does vaccination protect a person against disease? 2

Total 15 marks

3. Give a biological explanation for each of the following with the aid of diagrams:

(a) A red blood cell bursts when placed in water. 3

(b) A plant cell does not burst when placed in water. 3

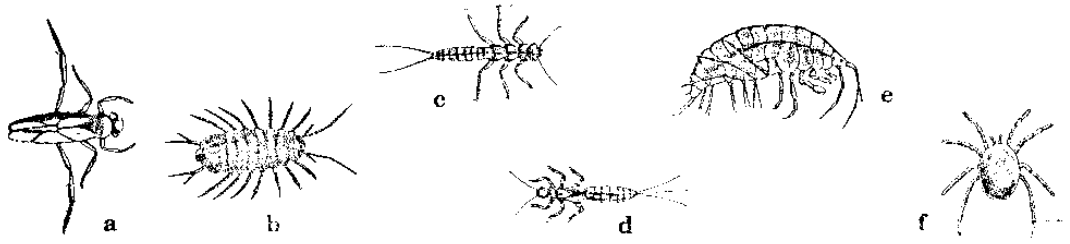
(c) Root cells take up salts into the cells when, their concentration outside the cells, is lower than that inside the cells 3

(d) Draw a labelled diagram of a named animal like Protist and a named plant like Protist. (6

or

(d) Construct a key to identify the following organisms. The names of the pond animals are: 6)

a = water boatman
b = water louse
c = stonefly
d = mayfly
e = shrimp
f = water mite



Total 15 marks

4. Just before the Christmas holidays, a student left a potted plant in a dark locker, together with some left over bread. After the holidays, the plant was found dead. He found a mould growing over the bread.		
(a) How was the mould able to grow in the dark, whereas the plant was unable to do so? Explain your answer.	3	
(b) Mention one favourable condition found in the locker that could have promoted fungal growth.	1	
(c) The original bread left in the locker did not contain any mould, so how did the mould grow?	1	
(d) When the student tested the pin mould for starch, a negative test resulted. What does the pin mould use as a food store ?	1	
(e) Draw a labelled diagram to show the important structures in a pin mould.	4	
(f) The pin mould belongs to the kingdom Fungi. Give 2 beneficial uses of fungi.	2	
(g) Give 2 diseases caused by fungi.	2	
(h) Give an example of a unicellular fungus.	1	
Total 15marks		
5. 2 insects are in the sun. One of the insects is a relatively large cockroach and the other is a relatively small ant. Eventually their bodies both reach the same temperature.		
(a) The 2 insects now both move in the shade. Their body temperature starts to decrease. Which insect will lose the heat faster, the cockroach or the ant?	1	
(b) Explain why.	3	
(c) Give 3 general characteristics of insects.	3	
(d) The cockroach undergoes ***incomplete metamorphosis*** during its life cycle. Explain what this means.	2	
(e) The ant undergoes ***complete metamorphosis*** during its life cycle. Explain what this means.	2	
(f) A common erroneous idea *('erroneous' means mistaken)* is that spiders, ticks and mites are also insects. To which class do these organisms belong?	1	
(g) Give 3 general characteristics of this class.	3	
Total 15marks		