1. What is the overall reaction (formula) for photosynthesis?

   ……

2. How does this compare to the overall reaction for cellular respiration?

   ……

3. Where does the energy for photosynthesis come from?

   ……

4. What plant pigments are involved in photosynthesis?

   ……

5. Explain why chlorophyll appears green to us in terms of what happens to different wavelengths of light that strike a chlorophyll molecule.

   ……

6. In what organelle of a plant cell does photosynthesis take place?

   ……

7. What is photosynthesis waste product?

   ……

8. What is the overall reaction (formula) for cell respiration?

   ……

9. In what organelle of a cell does cell respiration take place?

   ……

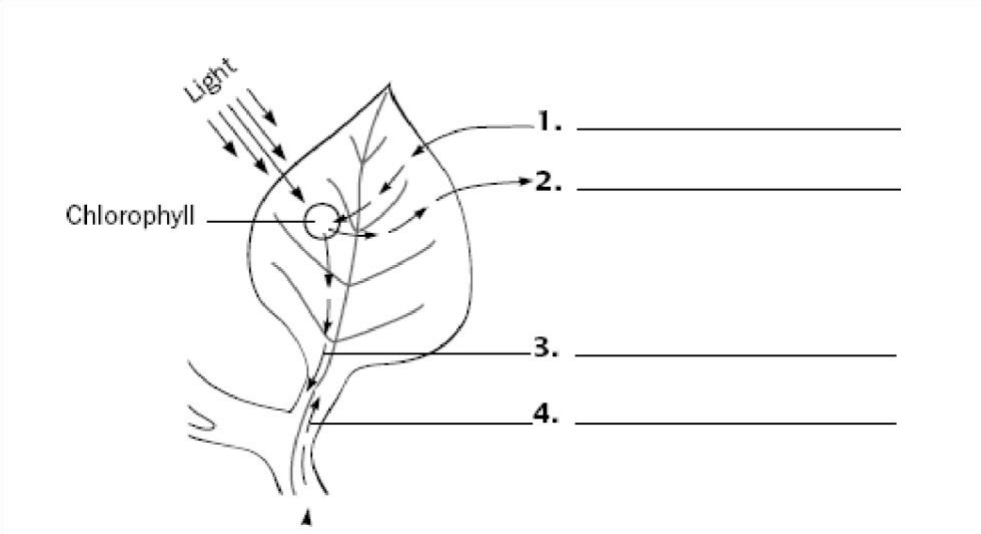
10. What is cell respirations wastes product?

    ……

(10 marks)

11. After it is labeled, the diagram below will illustrate photosynthesis. Write each of the following terms on the correct numbered line. Then answer the questions that follow.

Carbon Dioxide Glucose Oxygen Water



12. In photosynthesis, what substances come in from the outside?

……

13. What substances are produced?

……

(6 marks)

Answer the following questions relating to cellular respiration.

14. The purpose of cellular respiration is to _____ the energy from carbohydrates and other organic molecules stored during photosynthesis.

15. Write the formula that shows the release of energy by the mitochondria.

……

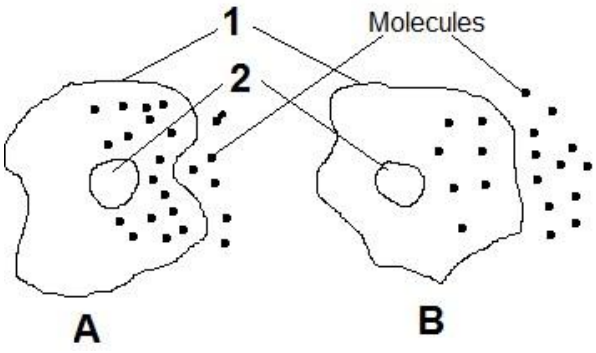
_____16- In which cell will the molecules diffuse in.

_____17- In which cell will the molecules diffuse out.

_____18- In which cell is the removal of wastes occurring.

_____19- In the two cell which structure is the nucleus.

_____20- In the two cells which structure is a permeable membrane.



(7 marks)

21 Element **X** has an atomic number of 18.

State the electronic configuration of an atom of element **X**.

……

(1 mark)

22 An atom of iron is represent $^{56}_{26}Fe$

Give the number of protons, neutrons and electrons in this atom of iron.

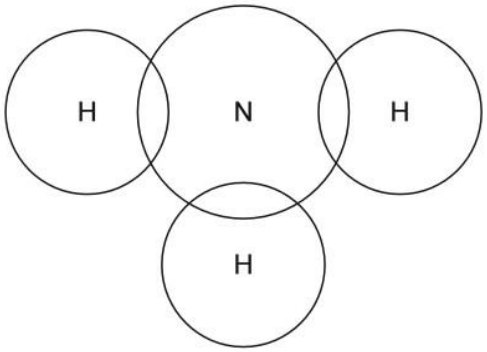
Number of protons: ……

Number of neutrons: ……

(3 marks)

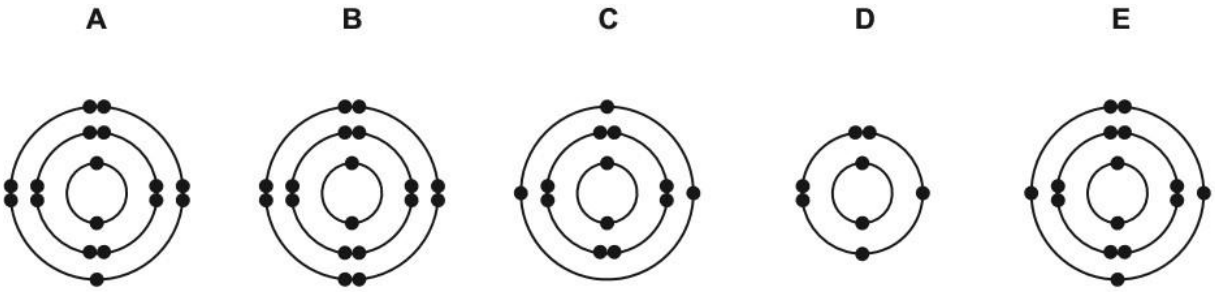
Number of electrons: ……

23 Complete the dot-and-cross diagram to show the electron arrangement in a molecule of ammonia. Show outer shell electrons only.



(2 marks)

24. The electronic structures of five atoms, A, B, C, D and E, are shown.



Answer the following questions about these structures. Each structure may be used once, more than once or not at all. State which structure, A, B, C, D or E, represents:

a. An atom of a metallic element. ..... (1 mark)

b. An atom with a proton number of 13. ..... (1 mark)

c. An atom of phosphorus. ..... (2 marks)

d. An atom with only two shells of electrons. .....
(2 marks)

e. An atom which forms a stable ion with a single negative charge. .....
(2 marks)

f. Complete the table to show the number of electrons, neutrons and protons.

	number of electrons	number of neutrons	number of protons
$^{14}_{6}C$	6		
$^{40}_{19}K^{+}$		21	

(3 marks)

25. An atom of potassium has an atomic number of 19 and a mass number of 39.

a. Complete the table to show the number of protons, neutrons and electrons in this potassium atom.

Number of		
Protons	Electrons	Neutrons

(2 marks)

b. Describe the positions of these particles in the potassium atom.

……

……

(2 marks)

c. State the electronic configuration of this potassium atom.

……

(1 mark)