

2nd Year Science, Christmas 2020

Mr. A. Goodison

Student Name _____

Periodic table of the elements

1											18						
1 H 1.008											2 He 4.003						
3 Li 6.941	4 Be 9.012											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
11 Na 22.99	12 Mg 24.31											13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.95
19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.87	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.69	29 Cu 63.55	30 Zn 65.41	31 Ga 69.72	32 Ge 72.64	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (97.90)	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3
55 Cs 132.9	56 Ba 137.3	57 La 138.9	72 Hf 178.5	73 Ta 180.9	74 W 183.8	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.6	81 Tl 204.4	82 Pb 207.2	83 Bi 209.0	84 Po (209.0)	85 At (210.0)	86 Rn (222.0)
87 Fr (223.0)	88 Ra (226.0)	89 Ac (227.0)	104 Rf (261.1)	105 Db (262.1)	106 Sg (266.6)	107 Bh (264.1)	108 Hs (277.0)	109 Mt (268.1)	110 Ds (271.0)	111 Rg (272.2)	112 Uub (285.0)	113 Uut*	114 Uuq (289.0)	115 Uup*	116 Uuh (289.0)	117 Uus*	118 Uuo (293.0)

Question	Marks	Awarded
1	4	
2	6	
3	6	
4	6	
5	7	
6	11	
7	4	
8	6	
9	4	
10	10	
Total	64	
Grade descriptor		

Junior Cycle	
Percentage	Grade Descriptor
≥ 90 to 100	Distinction
≥ 75 and < 90	Higher Merit
≥ 55 and < 75	Merit
≥ 40 and < 55	Achieved
≥ 20 and < 40	Partially Achieved
≥ 0 and < 20	Not Graded (NG)

Question 1 (BW1)

Read the following passage and answer the questions.

Jellyfish are known for drifting in ocean currents—but one type of jellyfish is very different.

Golden Jellyfish pack a remote island lake which is located in the Pacific Ocean. Golden Jellyfish spend much of their lives on the move during a daily journey that follows the Sun across the sky. Each morning at around 6 am, when the Sun rises, they begin to swim toward the light. They follow the sunlight until they nearly reach the shore—stopping just before the shadows caused by trees. They repeat this journey every day.



Golden jellyfish need this light to survive. The Sunlight is used by a special plant called algae which live inside the body of the jellyfish. The process of photosynthesis allows the algae to make food using sunlight, for itself and the jellyfish.

(a) What lives inside the Golden Jellyfish?

algae (1)

(b) Why does the golden jellyfish follow the light from the Sun?

To survive. It needs sunlight so that photosynthesis can take place, which will provide food for the algae and the jelly fish. (1)

(c) What is the cell structure that can be found in plant cells that allows photosynthesis to

take place? Chloroplasts (1)

(d) In order for the jellyfish to swim, its cells must release energy from the food the algae

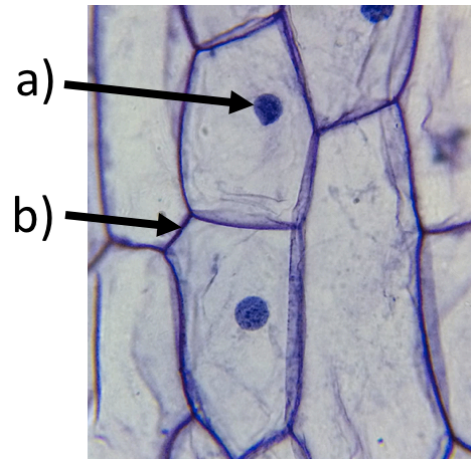
provide. In what part of the cell does respiration happen so that the energy is released from the food? Mitochondria (1)

Question 2 (BW1)

The image on the right show onion cells.

(a) Name the instrument used to view cells:

Microscope (1)



(b) Using the diagram name the part labelled a) and give its function.

Name: Nucleus

(1)

Function: Controls the activities of the cell and also contains DNA.

(1)

(c) Using the diagram name the part labelled b) and give its function. (Hint: it is **not** the cell membrane)

Name: Cell wall (1)

Function: Provides structure and support to the cell

(1)

(d) What is the function of the cell membrane?

Controls what substances may enter and leave the cell.

(1)

Question 3 (BW2 & BW3)

(a) Describe one difference between sexual and asexual reproduction.

Sexual: involves sex cells (gametes) / two parents / genetic variation / fertilisation [accept opposite for asexual]

(1)

(b) Outline the theory of evolution by natural selection.

As species reproduce they produce many offspring, this is called **overpopulation**. Due to random **genetic mutations** in DNA there is **variation between members of a species**. Due to limited resources available **competition** takes place and only the fittest offspring, which is the best suited to their environment, will survive. This is called **survival of the fittest**. The surviving organism is more likely to reproduce, and **pass on these beneficial genes to the offspring**. Over a long period of time a **new species may form**.

(Any three of the highlighted terms)

(3)

(c) Give one positive and negative effect microorganisms can have on your health

Positive: any correct answer. Example: helps with the digestion of food/ produces vitamins during digestion.

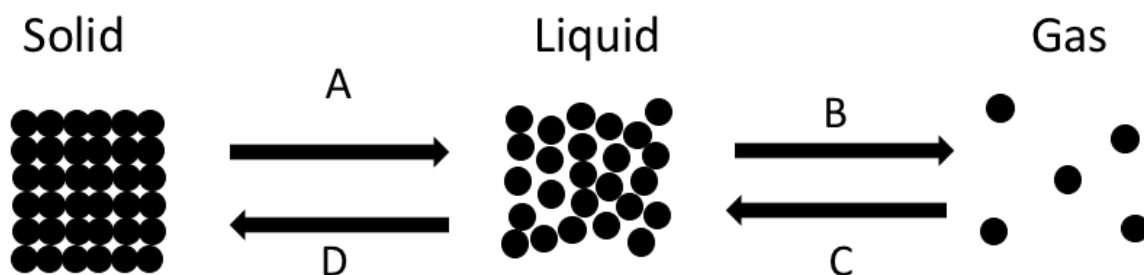
(1)

Negative any correct answer. Example: Can make you sick/cause infection/food poisoning.

(1)

Question 4 (CW2)

Use the diagram below to name the changes of state. One part is already completed (3)



A: melting	B: Evaporation
C: condensing	D: freezing/solidification

Describe the motion of the atoms/particles when the temperature is increased.

The particles vibrate/jiggle more

(1)

From the following separating techniques (listed 1-4) choose the most appropriate in each case. **Options. 1. Filtration, 2. Evaporation, 3. Distillation, 4. Chromatography**

(e) To separate a soluble substance (eg. salt) from water use Evaporation (1)

(f) To separate an insoluble substance (eg. Sand) from water use Filtration (1)

Question 5 (BW4)

The arrow on the diagram shows the direction the blood is flowing at that point in the heart.

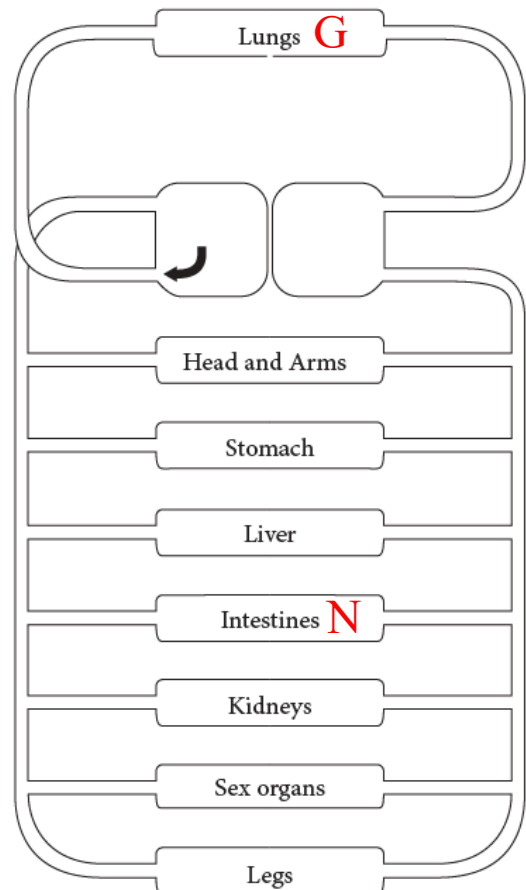
(a) Write the letter **G** in the diagram at a place where the blood **gains oxygen** (1)

(b) Write the letter **N** in the diagram at a place where the blood takes **in nutrients**. (1)

(c) Give one function of the liver

Produces enzymes to help digest food

 _____ (1)



(d) Name one lifestyle choice that could cause your resting pulse rate to *decrease* over time.

Regular exercise
 _____ (1)

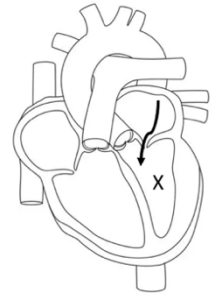
(e) What is the function of red blood cells?

To transport oxygen around the body (1)

(f) Describe one function of the circulatory system which does not involve the transport of substances around the body. White blood cells fight infection and disease OR the blood

helps regulate the body temperature (1)

(g) The chamber of the heart marked **X** pumps blood around the body and generates a pulse. Name chamber X. Left ventricle (1)



Question 6 (BW4)

Use the following words to fill in the blanks to describe breathing (8)

Lungs, air, oxygen, diaphragm, trachea, oesophagus, pressure, alveoli

(a) When a person inhales the 1 diaphragm lowers. This decreases the 2 Pressure inside the lungs. The lungs expand and 3 air is taken in. 4 Air travels down the 5 trachea into the lungs. Once the air has entered the lungs it goes into tiny air sacks called 6 alveoli. This is where diffusion happens. 7 Oxygen leaves the lungs and enters the blood while carbon dioxide leaves the blood and enters the 8 lungs.

(b) Name the parts labelled **A** and **B** in the diagram.

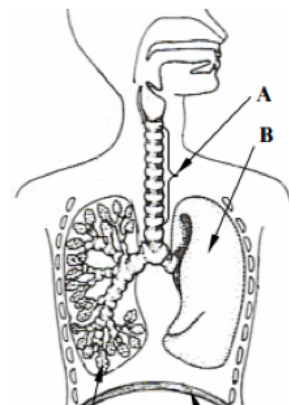
A: Trachea (1)

B: Lung (1)

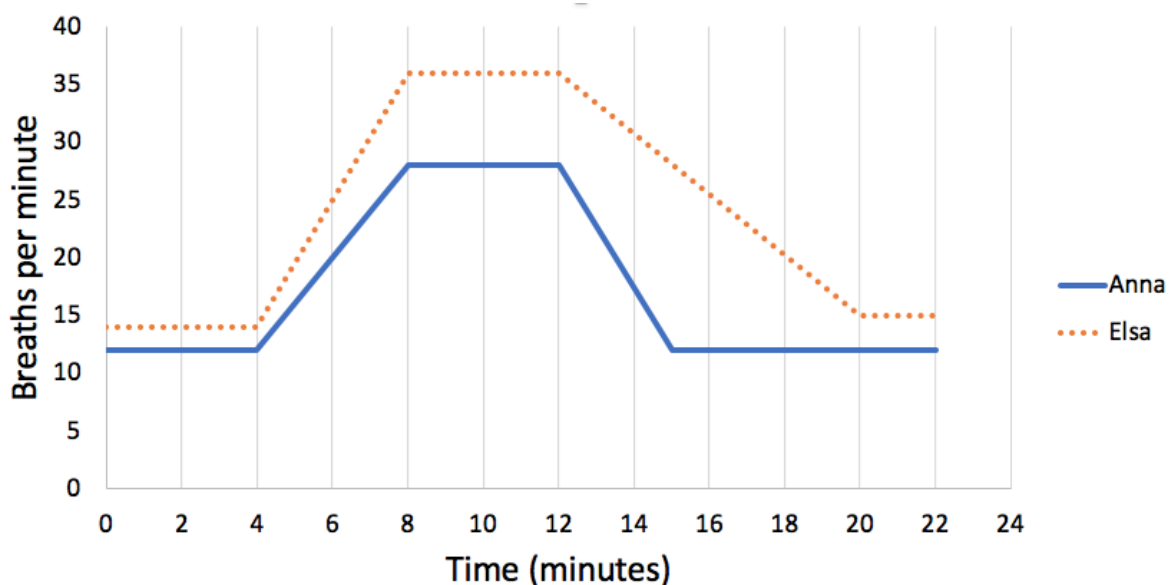
(c) Part **A** has rings of cartilage. What do the rings of cartilage do?

They protect the trachea OR they help prevent the trachea from closing

 _____ (1)



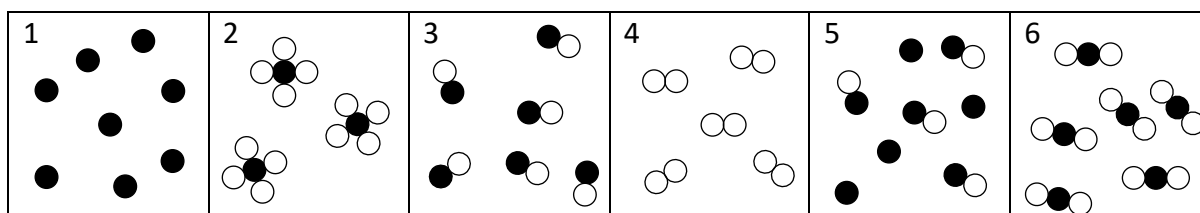
Question 7



- (a) At what time did these two people start exercising? 4 minutes (1)
- (b) Which person has the greatest breath rate during exercise? Elsa (1)
- (c) At what time did they stop exercising? 12 minutes (1)
- (d) Whose breathing rate took the longest to return to normal? Elsa (1)

Question 8

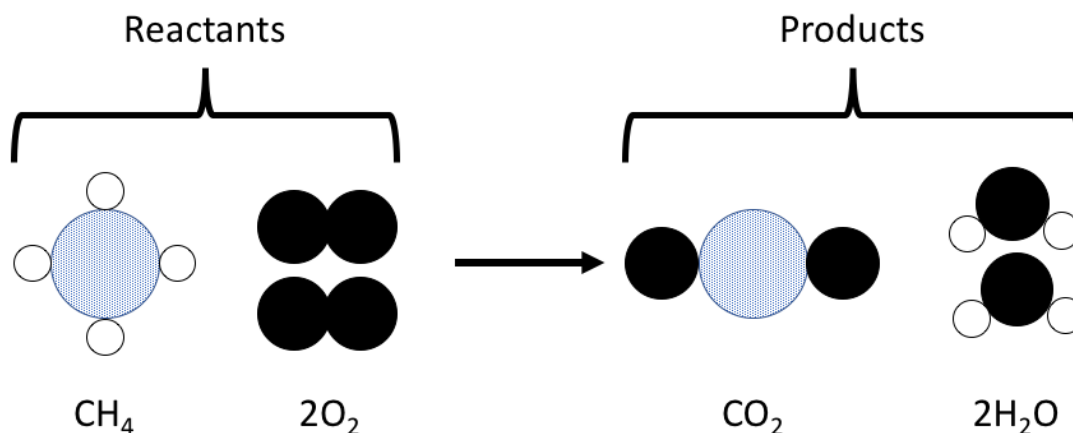
- (a) Look at the diagrams below and decide whether each one represents the particles in an **element, compound or mixture**. Different colours represent atoms of different elements. (6)



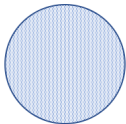


1 Element	4 Element
2 Compound	5 Mixture
3 Compound	6 Compound

Question 9 (CW2)

Natural gas contains methane (CH_4). Methane is a fuel. Methane burns in oxygen to produce carbon dioxide and water. The diagram below represents the reaction.



(a) Count the number of each type of atom in the products to complete the table below (1)

Element	Type of atom	Number of atoms in reactants	Number of atoms in products
Carbon		1	1
Hydrogen		4	4
Oxygen		4	4

(b) Mass is conserved (the same) during this reaction. What evidence is there for this?

There are the same number of atoms (circles) in both the reactants and products.

_____ (1)

(c) Is the burning of methane a physical or chemical change? Chemical change (1)

A Describe one difference between a physical change and a chemical change.

In a chemical change a new substance is formed. This does not happen for a physical change. OR During a chemical change chemical bonds are broken to rearrange atoms. No chemical bonds are broken between atoms in a physical change. (1)

Happy Christmas to the best students!

