2nd Year Science, Christmas 2020

Mr. A. Goodison

Student Name _____

Periodic table of the elements

1																	18
1 H 1.008	2											13	14	15	16	17	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	3	4	5	6	7	8	9	10	11	12	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? _____(1)

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

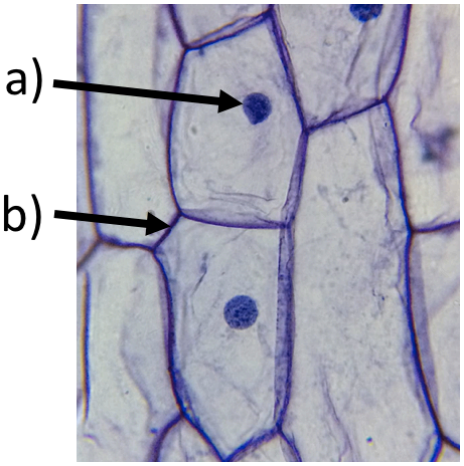
_____

_____(1)

(c) What is the cell structure that can be found in plant cells that allows photosynthesis to take place? _____(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? _____(1)

Question 2 (BW1)



The image on the right show onion cells.

(a) Name the instrument used to view cells:

_____ (1)

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

Name_____(1)

Function_____

_____(1)

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

Name_____(1)

Function_____

_____(1)

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

_____

_____(1)

Question 3 (BW2 & BW3)

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

_____

_____

_____(1)

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

_____

_____

_____

_____

_____

_____

_____

_____

_____(3)

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

Positive _____

_____

_____(1)

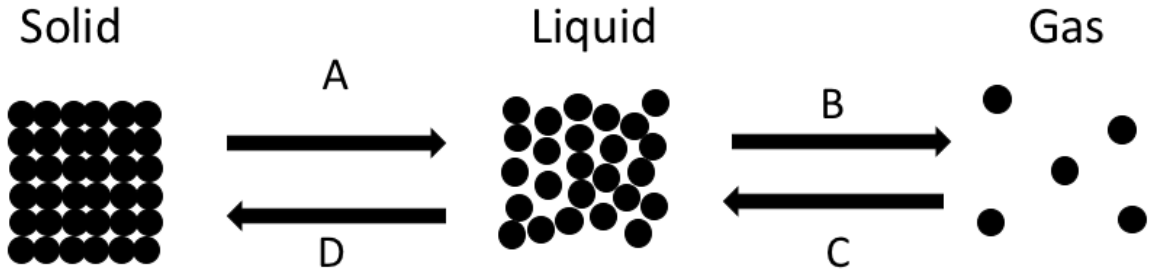
Negative _____

_____

_____(1)

Question 4 (CW2)

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



A:	B: **Evaporation**
C:	D:

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

_____

_____(1)

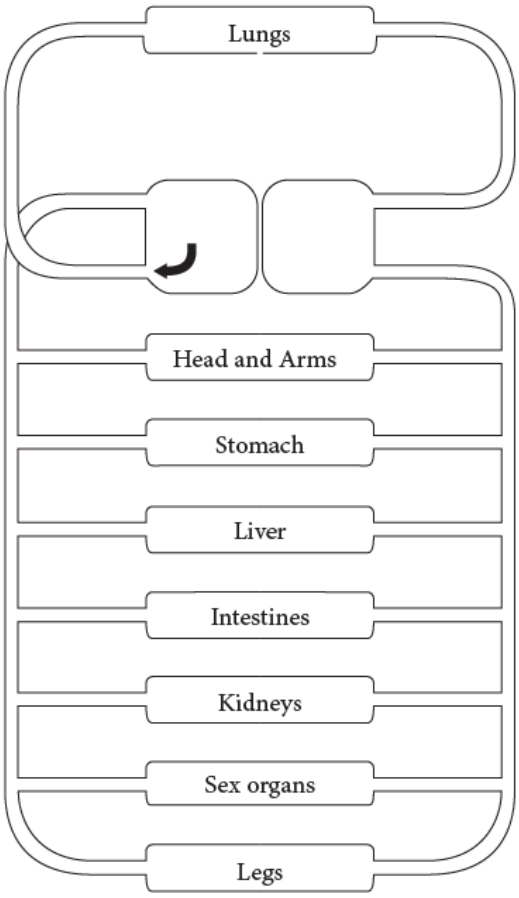
From the following separating techniques (listed 1-4) choose the most appropriate in each case. **Options. 1. Filtration, 2. Evaporation, 3. Distillation, 4. Chromatography**

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

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

_____

_____

_____

_____ (1)

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

_____

_____(1)

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

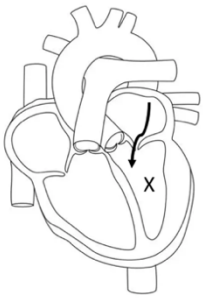
_____(1)

(f) Describe one function of the circulatory system which does not involve the transport of substances around the body.

_____(1)

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

_____ (1)



Question 6 (BW4)

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

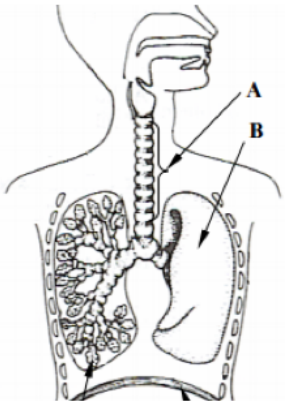
Lungs, air, oxygen, diaphragm, trachea, oesophagus, pressure, alveoli

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

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

A_____ (1)

B_____ (1)



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

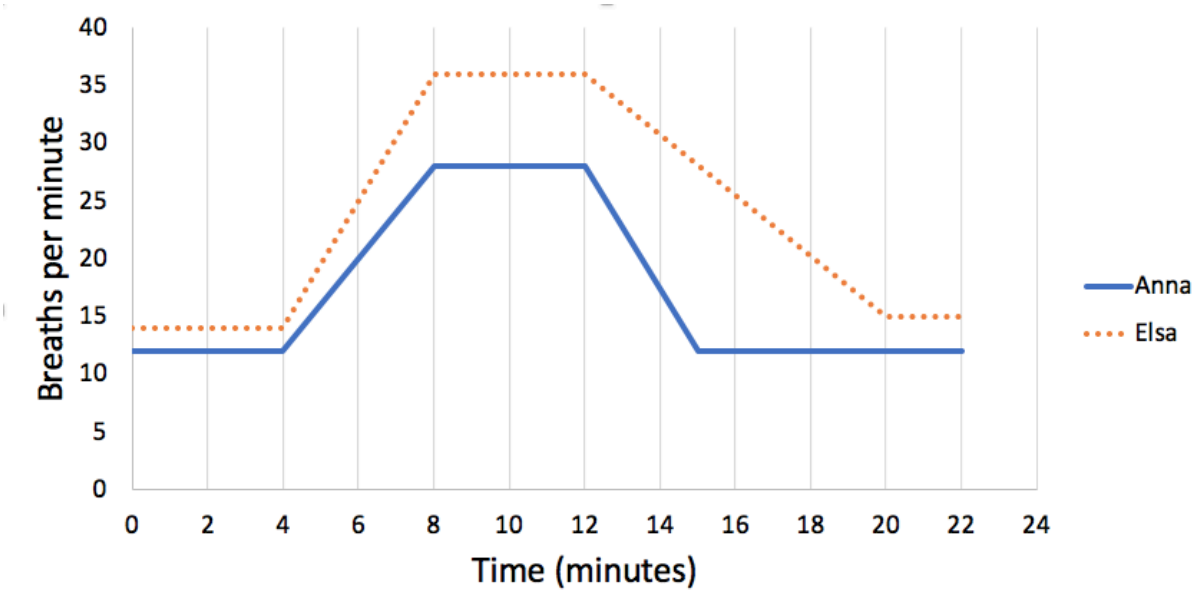
_____

_____

_____

_____(1)

Question 7



(a) At what time did these two people start exercising? _____(1)

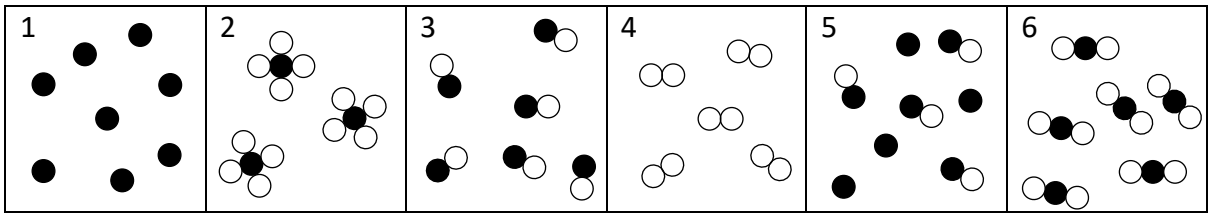
(b) Which person has the greatest breath rate during exercise? _____(1)

(c) At what time did they stop exercising? _____(1)

(d) Whose breathing rate took the longest to return to normal? _____(1)

Question 8

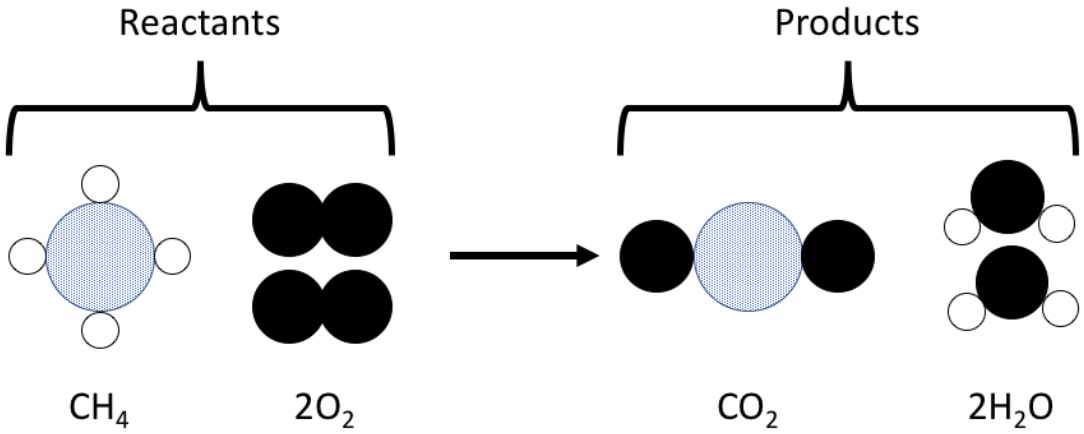
(a) Look at the diagrams below and decide whether each one represents the particles in **an element, compound or mixture**. Different colours represent atoms of different elements.(6)



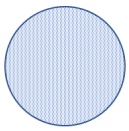
1	4
2	5
3	6

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	
Hydrogen		4	
Oxygen		4	

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

_____

_____

_____(1)

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

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

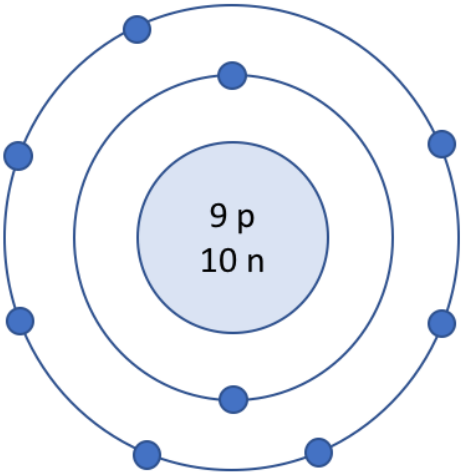
_____

_____

_____(1)

Question 10 (CW3)

The image below shows the Bohr model of an atom.



Key
p = protons
n = neutrons

(a) State the atomic number of the atom _____ (1)

(b) State the mass number of the atom _____ (1)

(c) What do the dots on the circles represent? _____ (1)

(e) Using the periodic table (on the front cover of this test), identify the element (by name or symbol) that is made up of this type of atom. Justify your answer.

Element: _____ (1)

Reason: _____

_____

_____(1)

(f) Match each of the following sub-atomic particles to their descriptions in the table below (3)

Electron Neutron Proton

Description	**Particle**
Positively charged	
Negatively charged	
No charge	

Which two sub-atomic particles have the same mass? (1)

1. _____ 2._____

Which sub-atomic particle has the least mass? _____ (1)

Happy Christmas to the best students!