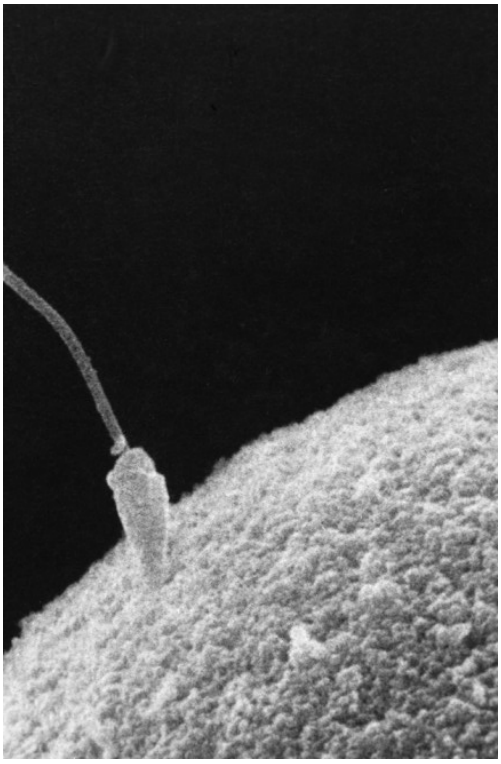
2nd Year Science, Midterm 2022

Mr. A. Goodison

Student Name _____



Answer all questions in the spaces provided.

Good luck!

An image of a sperm meeting an egg.

Question	Marks	Awarded
Total	**47**	
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

Use the following terms to fill in the blanks of the paragraphs. (4)

Temperature, surface area, concentration, catalyst

a) Increasing the Temperature of the reactants means the particles will have more energy and will move about more. This will cause more collisions and give the particles more energy for an effective collision.

b) Increasing the Surface area means more reactant particles will be exposed. This means there will be more collisions between reactants causing the products to form at a faster rate

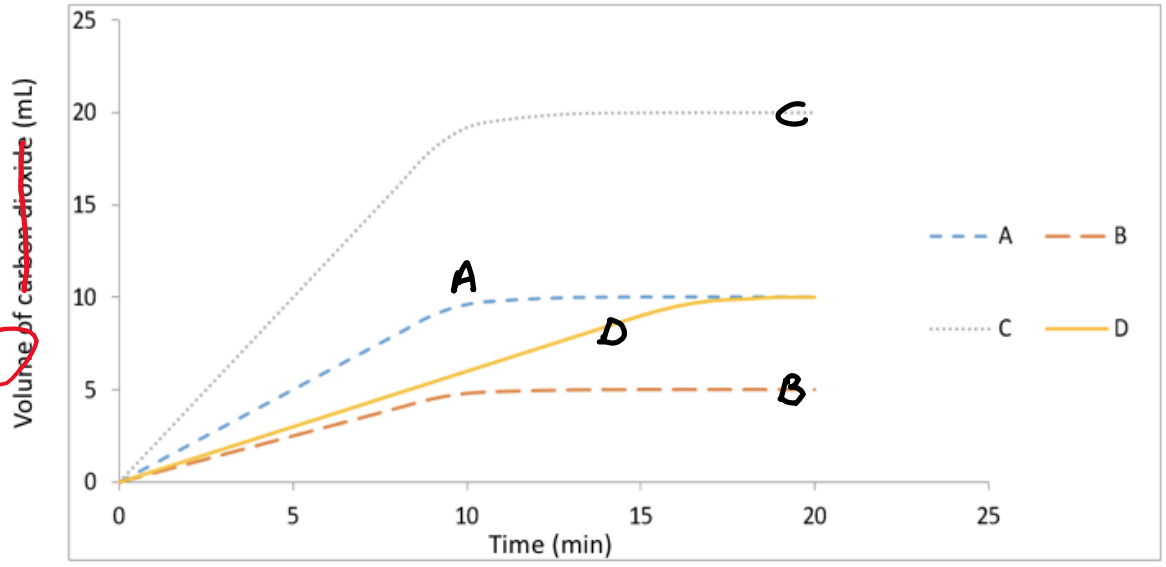
c) Increasing the Concentration of reactants means there will be more particles and hence more collisions. This will cause the products to form at a faster rate

d) Adding a Catalyst decreases the amount of energy needed for an effective collision. Therefore, more collisions will be effective and cause the products to form at a faster rate.

Question 2

Hydrochloric acid is a liquid which undergoes a reaction with the metal magnesium (solid) to produce Hydrogen gas. The graph below shows the volume of hydrogen released (Y-axis) against time (X-axis). In each of the cases labelled A, B, C and D the following variables were kept constant: temperature, volume of hydrochloric acid used, and the concentration of hydrochloric acid used.

Hydrogen



(b) Which curve (A, B, C or D) had the **fastest** rate of reaction at the beginning? Justify your answer.

C, because it has the steepest slope

(c) In which case, A, B, C or D, was the least mass of magnesium used? Explain your answer. (2)

B, because it produced the least volume of gas

(d) Explain any one possible difference between the conditions used during case A and the conditions used during case D. (2)

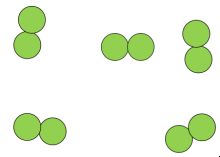
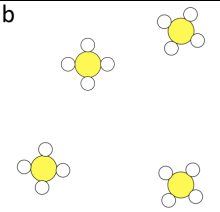
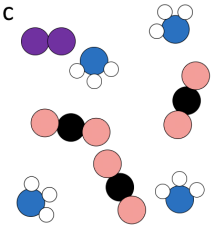
A may have a catalyst OR A may have had magnesium with a greater surface area
"A had a higher temperature" not acceptable as the question stated temperature was constant

(g) Give one advantage of using a graph to present data. (1)

It is easier to spot patterns OR trends OR outliers in the data

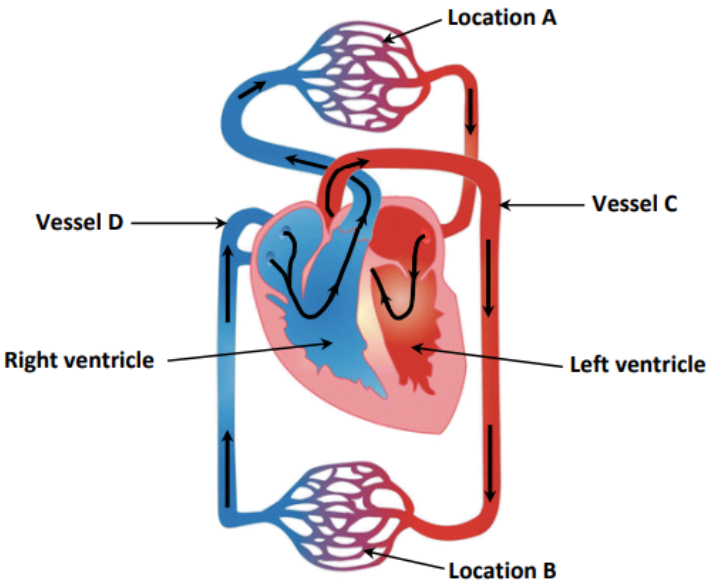
Question 3

Complete the table below to decide if these gasses are elements, compounds or mixtures. Justify your answer in each case. (6)

Diagram	**Elements, compound or mixture**	**Justification**
a 	Element	It is an element because this particle only contains one type of atom.
b 	Compound	It is a compound because this particle contains more than one type of atom joined together by a chemical bond.
c 	Mixture	It is a mixture because it contains two or more different types of particles that are not joined by a chemical bond.

Question 4

The diagram shows the human heart and some of the blood vessels of the circulatory system. The arrows indicate the direction in which the blood flows as it travels around the body.



(a) The table below lists statements about the diagram. Indicate if each statement is true or false by putting a tick (✓) in the correct column.

(4)

Statement	True	False
The blood in vessel **C** is deoxygenated.		✓
The organs found at location **A** are part of the respiratory system.	✓	
Carbon dioxide leaves the blood at location **B**.		✓
Vessel **D** is a vein.	✓	

Vessel C has thicker walls than vessel D. Explain why. (1)

C is an artery. Arteries need thick walls to withstand the high pressure from the heart
OR The thick walls allow the artery to expand and contract as the blood is pumped

1.Name the parts of the blood that carry out the following functions. (4)

Function	Name of the component of blood
Carry oxygen	Red blood cells
Fight infection and disease	White blood cells
Clot the blood	Platelets
Liquid part that transports nutrients and waste (eg. glucose and carbon dioxide)	Plasma

Question 5

Martin took part in a 60 metre race.

The graph below shows his distance-time graph. The graph is in three sections, labelled A, B, and C

(a) How many seconds did it take Martin to finish the race? 20s (1)

(b) What distance had Martin travelled after 16 seconds? 40m (1)

(c) Which was Martin's fastest section (A, B, or C) of the race? Justify your answer. (2)

C, because c has a steeper slope that A and B. OR because C has the steepest slope

(d) Find Martin's speed during his fastest section of the race, include the units in your answer. (2)

Speed = ?

Distance = 60 − 40 = 20m

Time = 20 − 16 = 4s

speed = Dist / Time = 20m / 4s = 5 m/s

Question 6

(a) Describe one difference between sexual and asexual reproduction. (2)

Sexual reproduction involves two parents where as a sexual reproduction involves only one
OR The offspring for asexual reproduction are clones while offspring for sexual reproduction are
not. OR any other valid answer

(b) Outline evolution by natural selection. (3)

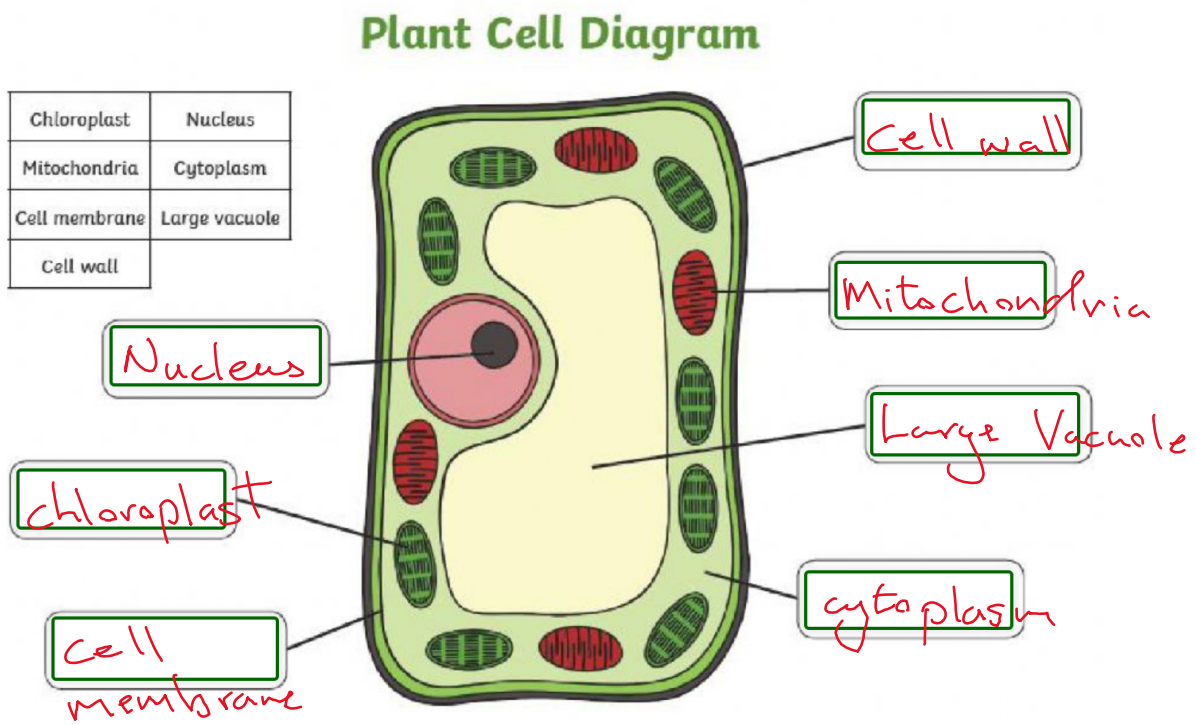
As species reproduce, they produce many offspring, this is called overpopulation. Due to random
genetic mutations in DNA there is variation between members of a species. Due to limited
resources available competition takes place and only the fittest offspring, which is the best suited
to their environment, 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)

Describe one difference between a physical change and a chemical change. (2)

In a physical change no new substance is formed while in a chemical change a new substance is
formed

Question 7

(a)Label the parts of the plant cell (6)



(b) Name two differences between plant and animal cells. (2)

Plant cells have a large vacuole, chloroplast and cell wall whereas animal cells do not have these.