

Class:

G O S F R (D)

Student Name:

Grant Duan

Part A /16	
Part B / 27	
TOTAL	/43

ANSWER SHEET for MULTIPLE CHOICE -Clearly mark 1 answer for each question.

QUESTION	A	B	C	D
1			✓	
2			✓	
3		✓		
4				✓
5			✓	
6			✓	
7	✓			
8				✓
9			✓	
10				✓
11	✓			
12	✓			
13			✓	
14				✓
15		✓		
16				✓

Part II

27 marks

Attempt Questions 16-19.

Allow about 35 minutes for this section

Question 16 (15 marks)

Marks

The paragraph below is a student's write-up of an experiment.

1. I put 100 mL of water in a test tube and measured its temperature. It was 18°C. Then I put some of the crystals in it and stirred the mixture to dissolve the crystals. I kept stirring until some remained on the bottom of the tube no matter how much longer I stirred.
2. I filtered the mixture and then evaporated all the water from the solution. I weighed the amount of solid left behind and found that 6.0 g had been dissolved.
3. Then I did it again but this time I heated the water using a Bunsen burner, gauze mat and tripod while the thermometer was suspended from a retort stand using water at 29°C. I found that 8.0 g dissolved.
4. I repeated it at 40°C and at 47°C and got 10.0 g and 11.2 g as my results

- (a) Write an aim appropriate for the experiment.

1

The purpose of the experiment is to test how the temperature of the water can have an effect on how much crystal is dissolved when stirred in water.

- (b) Complete the table for the student's results.

2

Temperature of Water (°C)	Mass of dissolved crystal (g)
18	6
29	8
40	10
47	11.2

- (c) Identify the independent and dependent variable for this experiment.

2

For this experiment, the independent variable was the temperature of the water and the dependent variable is the mass of how much crystal you put into it.

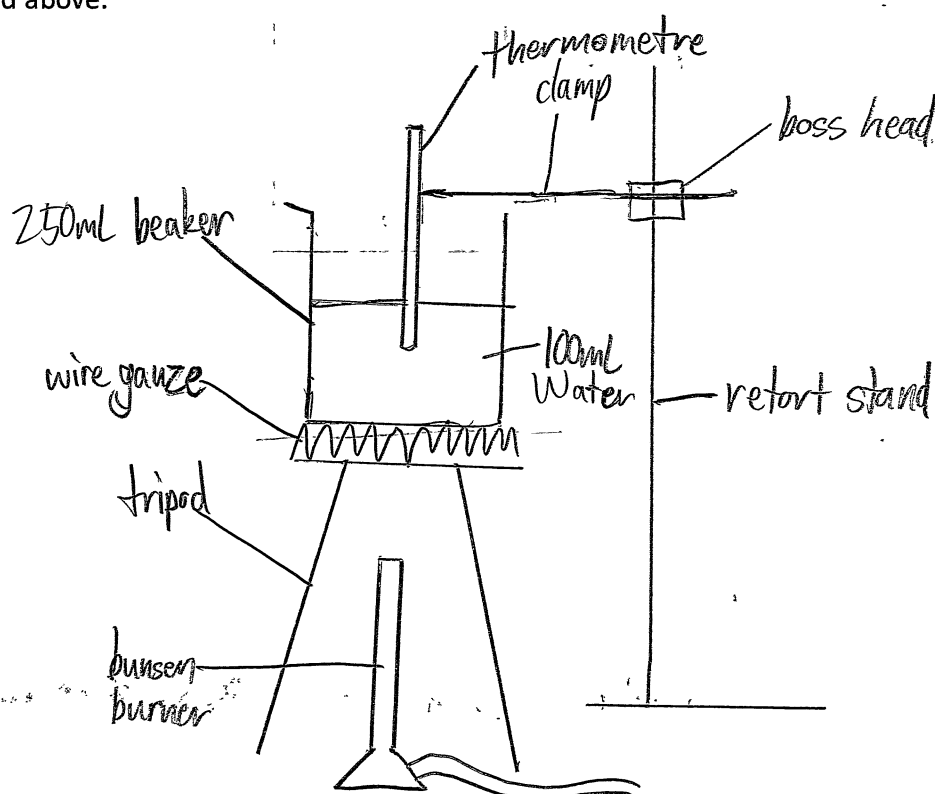
(d) Identify a variable that needs to be controlled during the experiment to make it a fair or valid test.

1

A controlled variable in the experiment would be the volume of the water and how much crystal you originally put in the water.

(e) Draw a labelled scientific diagram showing the equipment set up required to carry out step 3 as described above.

3



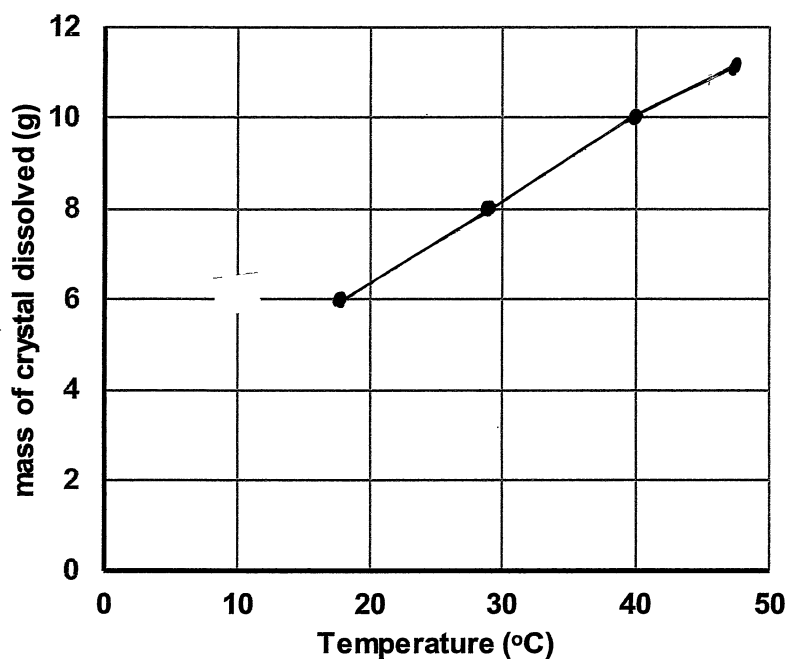
(f) Identify two safety issues the student will have to be concerned with through this experiment.

2

2 safety issues the student will have to be concerned about is if they don't have jackets on, since it could catch fire, and turning on the Bunsen safely, not rushed.

(g) Graph the students results on the axes provided.

3



(h) Write a conclusion for the experiment.

1

The conclusion for this experiment is that the higher the temperature of the water, the more mass the crystal will dissolve.

Question 17 (4 marks)

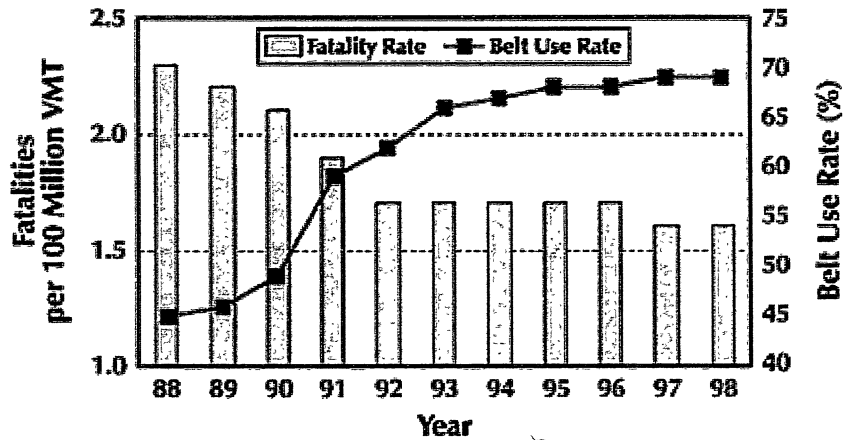
The following scientists are working in different branches or disciplines of science. Identify which branch each is working in:

4

Activity	Branch of Science
Paris is studying the crystals embedded in a rock.	Geology
Beau is developing a new type of plastic	
Shaun is investigating the eating habits of insects	Biology
Angus is monitoring the movement of an asteroid	Astronomy

Question 18. (4 marks).

The graph shows information about road fatalities and the use of seat belts in cars.



- (a) According to this data what is the trend shown in the number of fatalities between 1988 and 1996? Provide data to support your answer. 2

The trend in fatalities is that the rate of fatalities drop from 1988 to 1992, then it stays the same towards 1996.

- (b) Analyse the data presented and provide reasons for the conclusion you made. 2

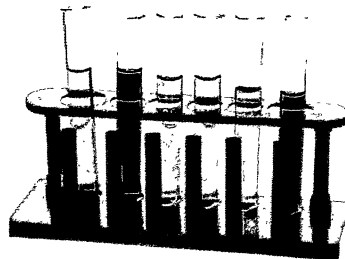
The conclusion I have made for this graph is that the higher the rate of seatbelts used, the less the rate of fatalities, because the information in the graph suggests that the rates match up.

Question 19. (4 marks).

The drawing made by a scientist was twice as big as the real size of the object.

Determine the actual length of the whole piece of equipment. *Show your working.*

2



The drawing is about 4.4cm in length. If it was twice the size of the actual equipment, then the real size would be 2.2cm in length.

b) There are some problems with the equipment diagram above. Identify two things that the scientist needs to change to accurately represent the equipment above.

2

The mistakes in the diagram made by the scientist is that it is drawn in 3D, not 2D and the diagram is not labelled.

END OF EXAM