

Class:

G O S F R (D)

Student Name:

Armean Hossain

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			O	
2				O
3	O			
4				O
5			O	
6			O	
7	O			
8				O
9			O	
10				O
11	O			
12	O			
13			O	
14				O
15		O		
16				O

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

To find how temperature affects how much crystals dissolve in water.

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

2

Temperature of the water (°C)	Amount of crystal dissolved (g)
18°C	6.0g
29°C	8.0g
40°C	10.0g
47°C	11.2g

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

2

Independent: The temperature of the water.

Dependent: The amount of crystal dissolved.

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

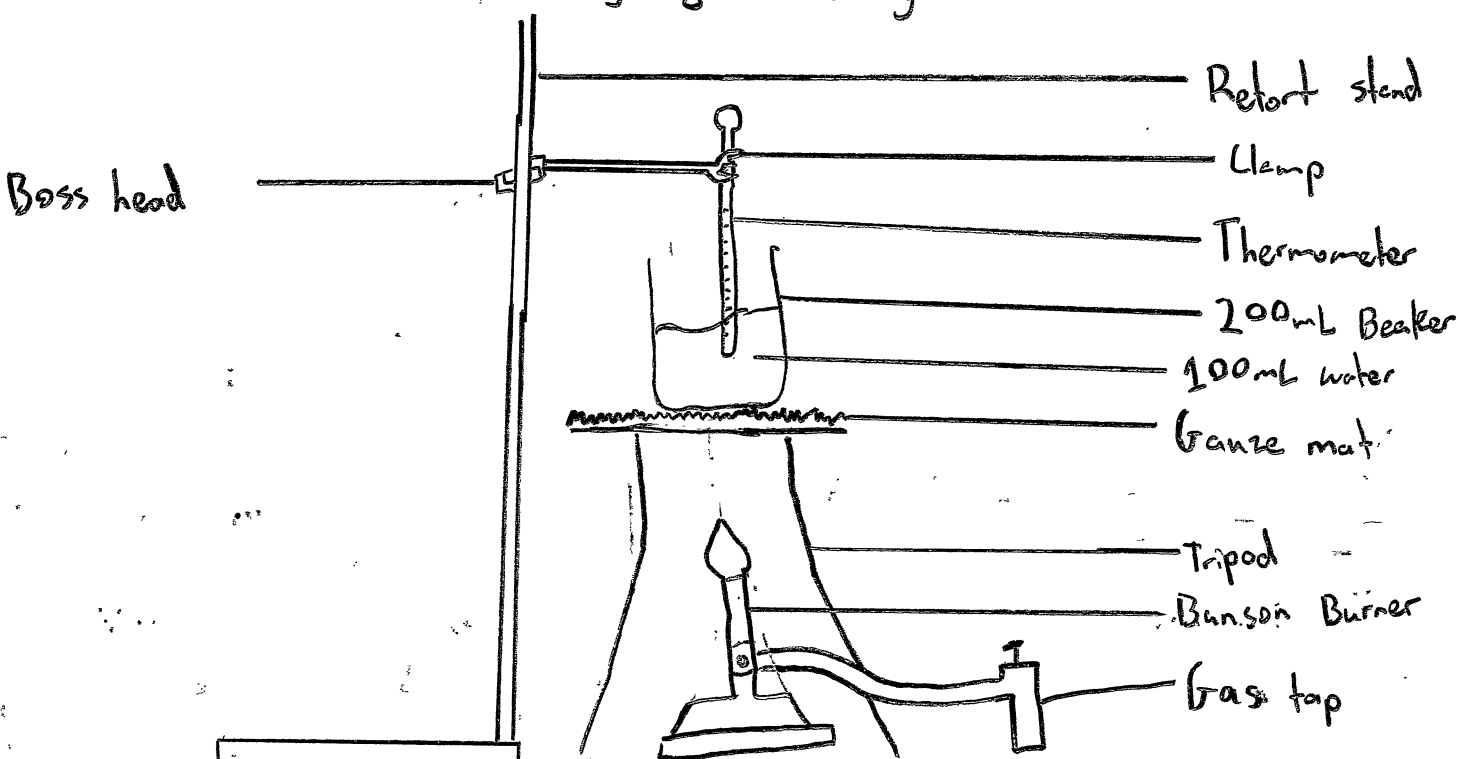
1

The type of crystal, the amount of crystal

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

3

Measuring crystals dissolving



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

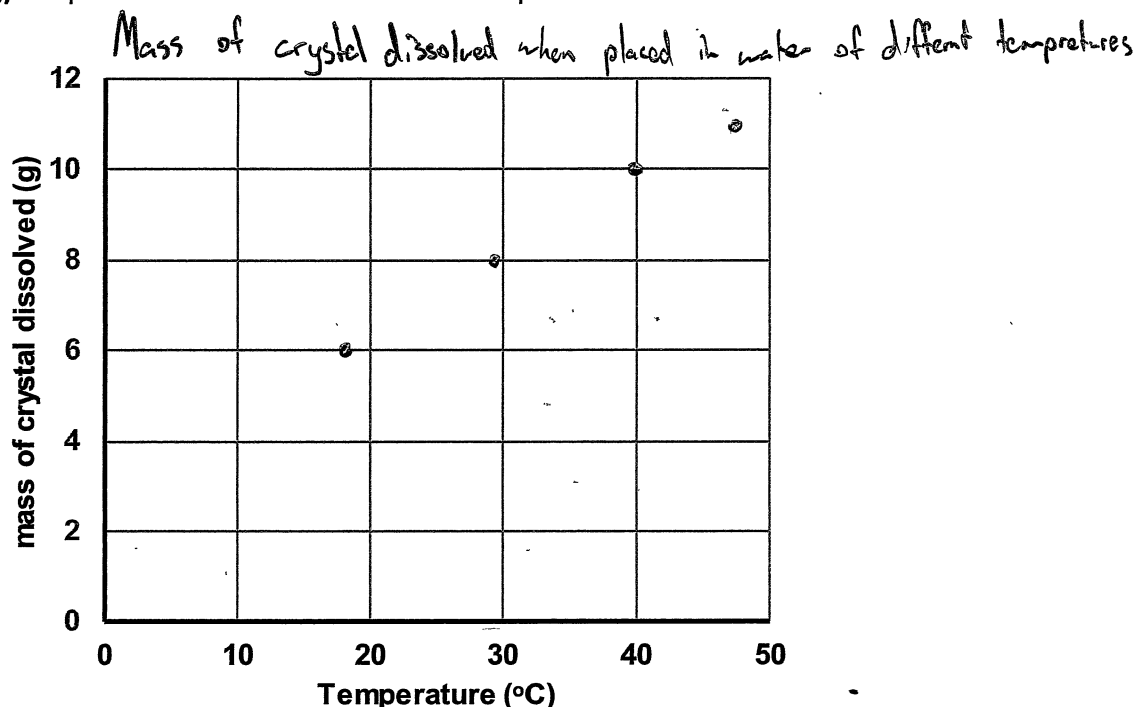
2

1. The beaker may be hot after the experiment.

2. When filtering the water, hot water may be spilled.

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

3



(h) Write a conclusion for the experiment.

1

The higher the temperature of the water, the more crystal that dissolved.

Question 17 (4 marks)

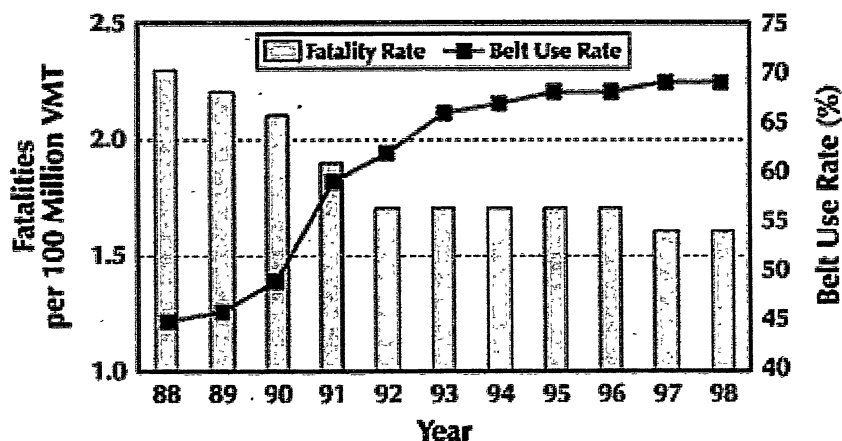
The following scientists are working in different branches or disciplines of science. Identify which branch each is working in:

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	meteorology/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

According to the data, the higher the belt usage, the lower the fatality rates were. When belt usage was 45% compared to 70%.

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

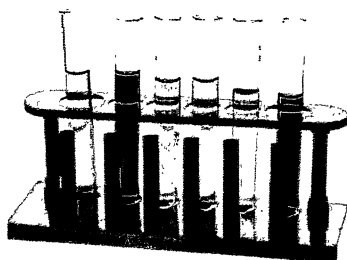
Each year as belt usage increased, the amount of fatalities per 100 million VMT decreased. This shows the correlation between the two.

fatality rates went down 1.1 million fatalities per 100 million VMT.

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



Since each test tube should be 10cm, so the diagram should be 9cm wide, since the diagram is 4.5cm wide. The height

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 diagram is drawn in 3D, and it should be in 2D. The diagram is also not labeled.

should be 6cm tall

END OF EXAM