education

Department of Education
FREE STATE PROVINCE

PRACTICAL TASK

GRADE 10

PHYSICAL SCIENCES

JUNE 2017

MARKS: 40

TIME: 1 HOUR

This paper consists of SIX pages.

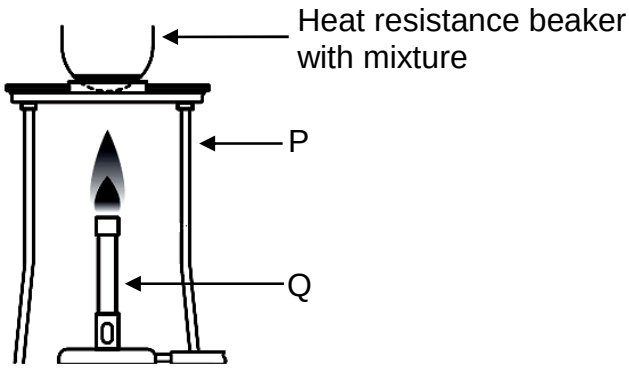
Name of learner: …….. Grade: ……

INSTRUCTIONS AND INFORMATION

1. Write your name and grade in the appropriate spaces on the FRONT PAGE of this question paper.
2. Answer ALL questions in the spaces provided in THIS QUESTION PAPER.
3. You may use a non-programmable pocket calculator.
4. You may use appropriate mathematical instruments.
5. Show ALL the formulae and substitutions in ALL calculations.
6. Round off your final numerical answers to a minimum of TWO decimal places where necessary.
7. Give brief motivations, discussions, et cetera where required.

QUESTION 1

A teacher mixes iron filings and sulphur in a heat-resistant beaker. He sets up the apparatus as shown below and then heats the mixture. A new product is formed.



1.1 Classify each of the following as either magnetic or non-magnetic by writing down only MAGNETIC or NON-MAGNETIC in the spaces below.

1.1.1 Iron fillings: _____ (1)

1.1.2 Sulphur powder: _____ (1)

1.1.3 The product after heating the mixture: _____ (1)

1.2 Give the name of the following apparatus:

1.2.1 **P** _____ (1)

1.2.2 **Q** _____ (1)

1.3 What is the colour of:

1.3.1 Iron filings _____ (1)

1.3.2 Sulphur powder _____ (1)

1.4 The learners observe that the contents of the beaker keep on glowing after the removal of the flame.

1.4.1 Is the reaction EXOTHERMIC or ENDOTHERMIC? (1)

_____

1.4.2 Motivate your answer to QUESTION 1.4.1. (1)

_____

1.5 What is the name of the product that is formed? (1)

_____

1.6 Write down a balanced equation for the reaction that takes place. (3)

_____

1.7 Write down ONE safety precaution that the teacher is supposed to follow during the demonstration. (1)

_____

_____

_____

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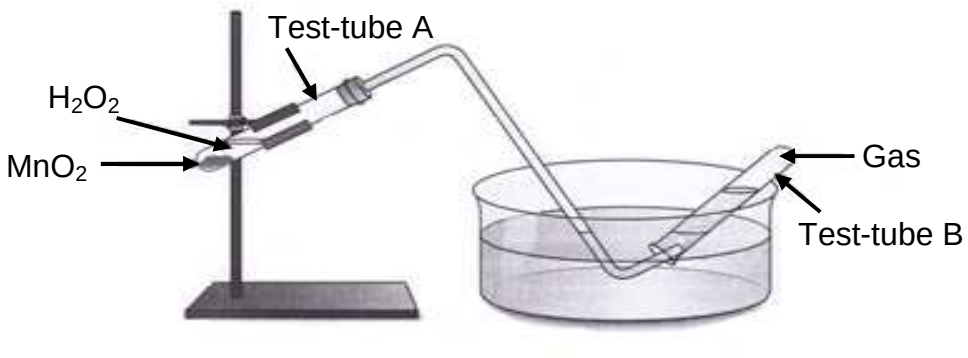
QUESTION 2

The grade 10 learners set up the following apparatus to demonstrate an experiment in which hydrogen peroxide (H_2O_2) undergoes a chemical change with the help of manganese dioxide (MnO_2). H_2O_2 is added to MnO_2 in test-tube **A** and a gas is collected in test-tube **B**.



2.1 Give the name of the gas that is collected in test-tube **B**. (1)

_____

2.2 How does one test for the gas in test-tube **B** to ascertain it is the gas one wants?. (2)

_____

_____

2.3 What is the function of the MnO_2 in this experiment? (1)

_____

2.4 What method is used to collect the gas in test-tube **B**? (2)

_____

2.5 Give a motivation why this method can be used. (2)

_____

_____

_____

2.6 Write down a balanced equation for the reaction that takes place. (3)

_____

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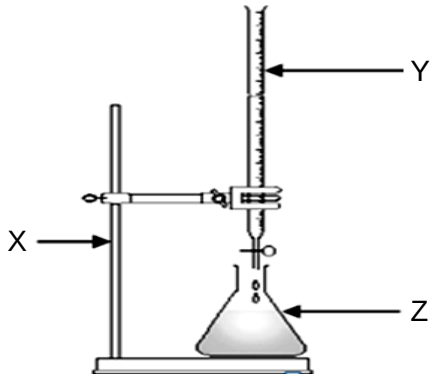
QUESTION 3

A grade 10 teacher demonstrates the reaction between solutions of hydrochloric acid and sodium hydroxide to her class. She uses the set of apparatus as shown in the diagram below, starting with hydrochloric acid in apparatus **Y** and sodium hydroxide in apparatus **Z**.



3.1 Give the name of the following apparatus:

3.1.1 **X** _____ (1)

3.1.2 **Y** _____ (1)

3.1.3 **Z** _____ (1)

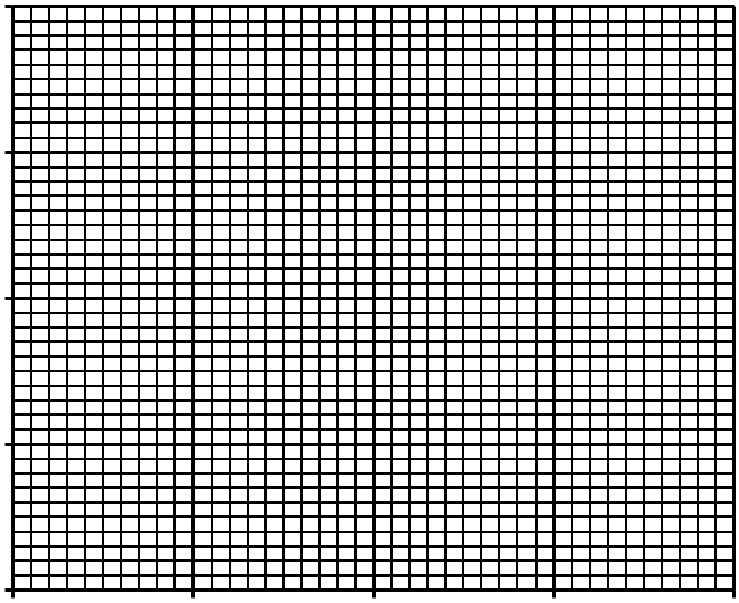
3.2 The teacher adds a few drops of bromothymol blue to the sodium hydroxide. Write down the colour CHANGE that occurs in apparatus **Z** when enough acid is added to the sodium hydroxide? (2)

_____

3.3 As the hydrochloric acid is added to the sodium hydroxide, the number of drops of acid is counted and the temperature of the solution in apparatus **Z** is recorded. The following table gives the data.

Number of drops	**Temperature (°C)**
0	20
10	25
20	40
30	35

Draw a graph of temperature (on y-axis) versus number of drops (on x-axis) on the following graph paper. Choose an appropriate scale and label your axes. PLOT the points and INSPECT THEM. Then CROSS OUT the one that is CLEARLY WRONG. Use the remaining three points to draw the best-fit line. (8)



3.4 By inspecting the data, what was the most likely temperature in the room where this experiment was done? (2)

_____

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GRAND TOTAL: [40]