GRADE 9 EXTERNAL SBA TASK 3 AND 4

MUNKOLO SECONDARY SCHOOL

INTEGRATED SCIENCE

DURATION: 40 MINUTES **MARKS : 20** **DATE: 13th MAY,2023**

NAME _____ SCHOOL _____

TASK 3

In this task you are going to compare the absorption rate of infrared radiations by a black mug cup and white mug Cup. You are provided with black mug cup, white mug cup, thermometer, tap water and clamp stand.

(a) Pour tap water in both cups to the brim. Clamp two thermometers to clamp and stand. Dip the thermometer in each cup and record the temperature of water in each cup

Temperature reading in white cup---------- [1]

Temperature reading in black cup---------- [1]

(b) Place a spirit burner at equidistance between the two cups. While the thermometers are still immersed in two cups, light the spirit burner with matches and leave the apparatus for 25 minutes

(c) Describe what happens to temperature reading in

(i)Black Mug cup

----------[1]

(ii)White mug cup

----------[1]

(d) Explain why there was a difference in temperature readings in these two mug cups

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----------[2]

(e) Give the conclusion of this experiment

----------[1]

(f) Basing on your conclusion above, explain why
(i)Houses in hot countries are painted white

----------[1]

(ii)The back grill of the refrigerator is painted black

----------[1]

(g) By what method of heat transfer does heat move from the sprit lamp to the walls of the cups?

------[1]

TASK 2

In this task you are going to investigate the percentage composition of oxygen in air. You are provided with water trough, measuring cylinder, matches, candle and floater.

(a) Measure 100cm^3 of water in the measuring cylinder and pour it in the water trough. Light a candle and put it on a floater. Place the candle and the floater on water in the trough. Allow the candle to burn freely whilst floating on water. Get a marker and divide the gas jar/ Long glass tumbler into five equal parts. Enclosed the burning candle with a gas jar and observe what happens to the burning candle.

Observation to the burning candle

----------[1]

(b) Give the reason for your observation in (a)

----------[1]

(c) What else did you observe in this experiment apart from the burning candle?

----------[1]

(d) State the reason for your observation in (c)

----------[1]

(e) Calculate the amount of oxygen that was used in combustion of the candle in this experiment
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---[2]

(f) Using your answer in (e), calculate the percentage composition of oxygen in air. use the formula given below:

(g) % Composition of oxygen = $\frac{Volume\,of\,oxygen\,used \in combustion}{total\,volume\,of\,air \in the\,jar}$ x 100%

_____
_____
_____
_____
_____[3]

(h) Give one industrial use of oxygen

_____
_____[1]

THE END!