Quiz 8 Debref

THE DARKNESS VS. THE LIGHT

…

WHO WILL WIN?

Question 1:

Which scientist is accredited with the discovery of the nucleus?

Niels Bohr
John Dalton
Ernst Rutherford 
J.J Thompson

Which scientist is accredited with the discovery of the electron?

Niels Bohr
John Dalton
Ernst Rutherford
J.J Thompson 

Question 2

When dissolved in water, acids…

- Dissociate into metal ion and non-metal ion
- Dissociate into metal and hydroxide ion
- Dissociate into a non-metal and hydrogen ion 
- Do not dissociate

When dissolved in water, salts..

- Dissociate into metal ion and non-metal ion 
- Dissociate into metal and hydroxide ion
- Dissociate into a non-metal and hydrogen ion
- Do not dissociate

Question 3

You are to prepare 750 mL of a 40 g/L solution of calcium iodide, CaI_2. What mass of calcium iodide will you need to prepare this solution?

18.75 g

30 g 

53.3 g

30 000 g

Question 4

What is the percent mass/volume concentration of caffeine in Ms Di Lallo's coffee if there is 34g of caffeine in 250 mL of coffee?

13 600%

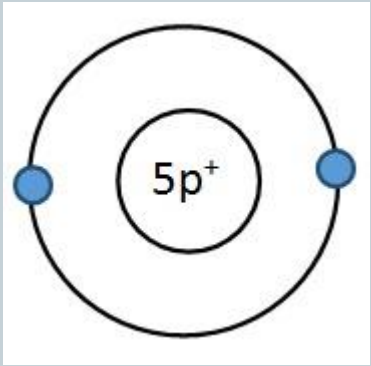
136%

13.6% 

0.0136%

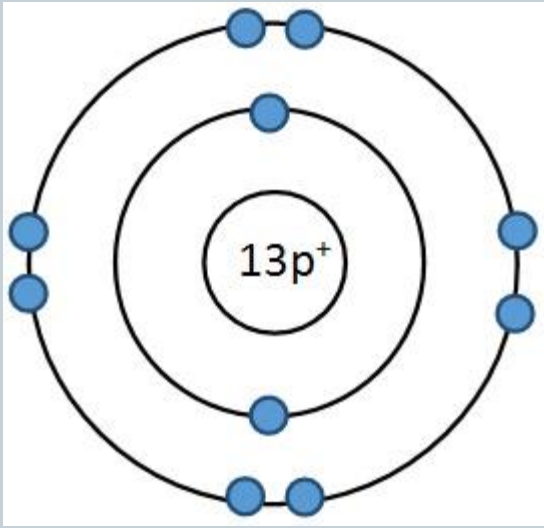
Question 5

Boron



$5\ p^+ + 2\ e^- = 3^+$

Aluminium



$13\ p^+ + 10\ e^- = 3^+$

Question 6

Which one of the following characteristics is sufficient to represent an atom using the Lewis Dot Diagram?

The atomic number

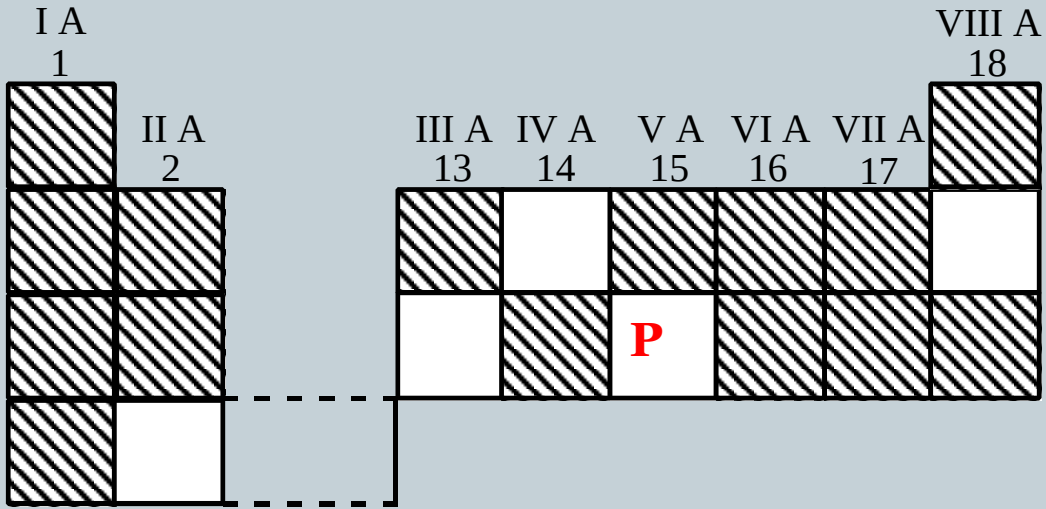
The number of total electrons

The period number

The group number 

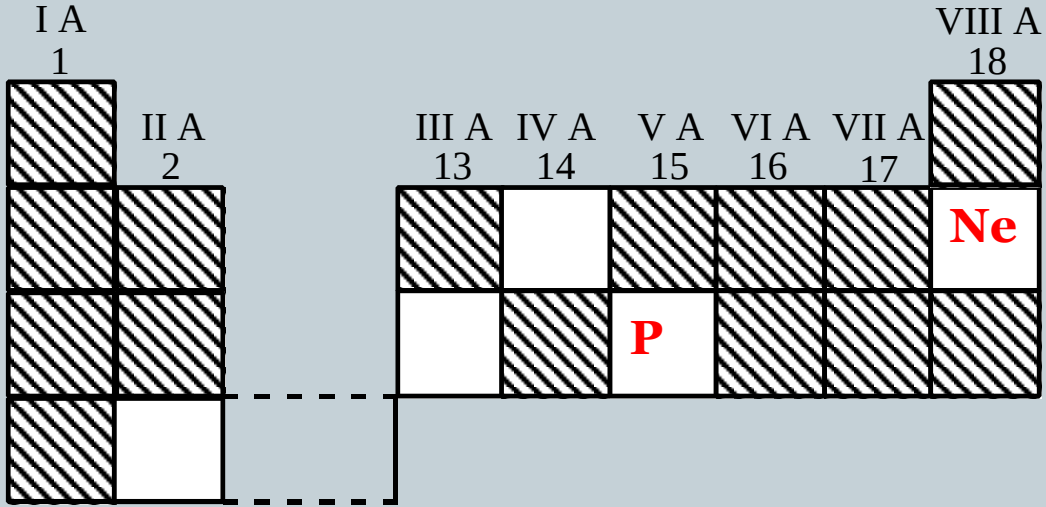
Question 7

1st element
3rd energy
level has 5 ve-



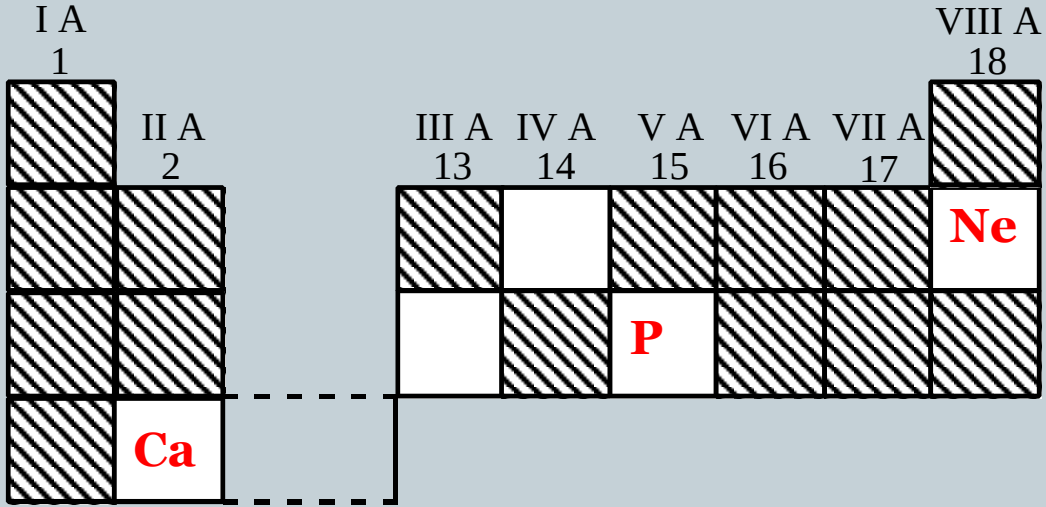
Question 7

2nd element
Gas which does not react with metals or non-metals



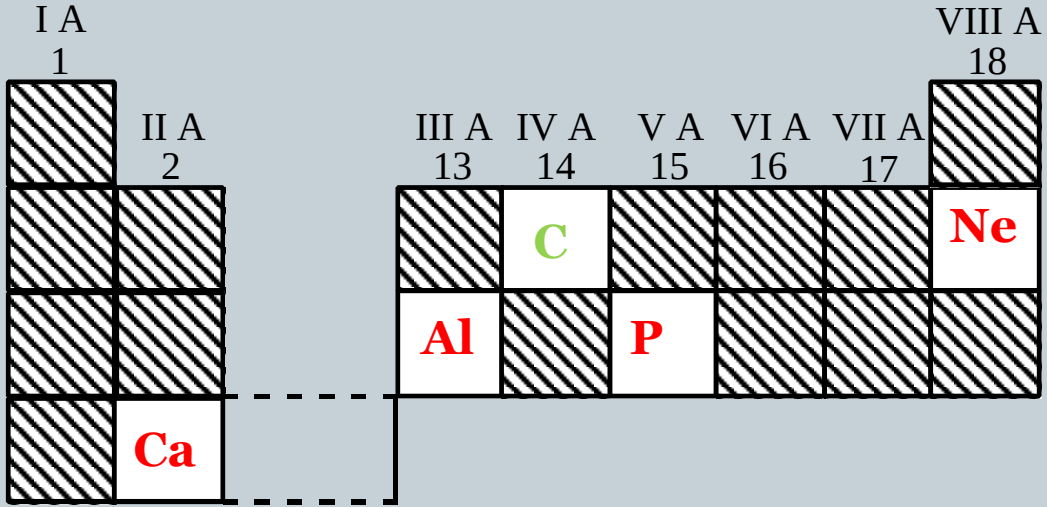
Question 7

3rd element
Alkaline Earth metal…
component in teeth



Question 7

4th element Light **metal** that has 3 more electrons than an inert gas



Question 8

$$2\,C_4H_{10(g)} + 13\,O_{2(g)} \rightarrow 8\,CO_{2(g)} + 10\,H_2O_{(g)} + \text{Energy}$$

29 g x 88 g 45 g

$x = (88\text{ g} + 45\text{ g}) - 29\text{ g}$

$x = 133\text{ g} - 29\text{ g}$

$x = 104\text{ g}$

Question 9

Dish soap	base	No effect on litmus	salt
pH of 7	salt	Blue litmus turns red	acid
Windex	base	Laundry detergent	base
Tomato juice	acid	Tastes sour	acid

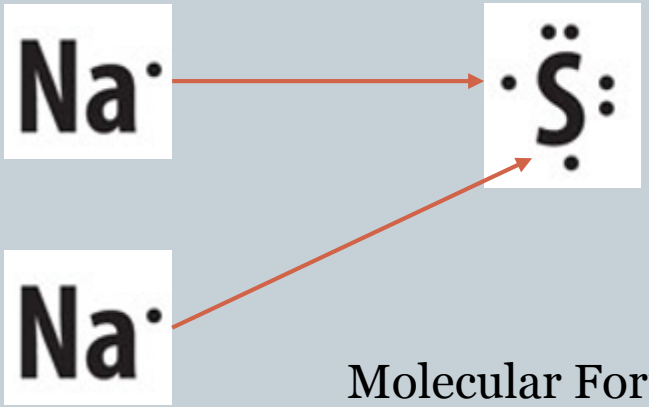
Question 9

Tomato juice	acid	No effect on litmus	salt
pH of 7	salt	Red litmus turns blue	base
Windex	base	Laundry detergent	base
Dish soap	base	Tastes bitter	base

Question 10

Molecular Formula = MgF_2

Question 10



Molecular Formula = Na_2S

Question 11

pH	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Thymolphthalein	Colourless									Blue				
Bromothymol Blue	Yellow						Green	Blue						
Phenolphthalein	Colourless							Fuchsia						
Methyl Orange	Red				Orange									

Your first unknown solution was **orange** in Methyl Orange, **fuchsia** in Phenolphthalein and **blue** in Thymolphthalein.

pH range: pH 10- pH 14 (*it's a base*)
Requires an acid to neutralize it.

Question 11

pH	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Thymolphthalein	Colourless									Blue				
Bromothymol Blue	Yellow						Green	Blue						
Phenolphthalein	Colourless							Fuchsia						
Methyl Orange	Red				Orange									

Your second unknown solution was **<u>orange</u>** using Methyl Orange and **<u>yellow</u>** in Bromothymol Blue.

pH range: pH 5-6 (*it's an acid*)
Yes, tt can neutralize the first unknown

Question 11

pH	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Thymolphthalein	Colourless									Blue				
Bromothymol Blue	Yellow						Green	Blue						
Phenolphthalein	Colourless							Fuchsia						
Methyl Orange	Red				Orange									

Your first unknown solution was **orange** in Methyl Orange, **fuchsia** in Phenolphthalein and **blue** in Thymolphthalein.

pH range: pH 10- pH 14 (*it's a base*)
Requires an acid to neutralize it.

Question 11

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Thymolphthalein	Colourless									Blue				
Bromothymol Blue	Yellow						Green	Blue						
Phenolphthalein	Colourless							Fuchsia						
Methyl Orange	Red				Orange									

Your second unknown solution was **colourless** using Thymolphthalein, and **blue** using Bromothymol Blue.

pH range: pH 8- pH 9 (*it's a* base)
No you cannot neutralize unknown 1 with it

Question 12

Conc. of Sb

g → mg; multiply by 1000

$$\frac{0.0024g}{1\ L} = \boxed{}$$

Over the toxic level for antimony, **advisory needed**

If converted the toxicity level, 0.006 ppm = $\frac{0.000006\ g}{L}$

Question 12

Conc. of Pb

mg → g; divide by 1000

$$54\ ppm = \frac{54\ mg}{1\ L}$$

Under the toxic level for lead, **no advisory needed**

If converted the toxicity level, 0.4 g/L = 400 ppm

Question 12

Conc. of Li

g → mg; multiply by 1000

$$\frac{0.02g}{1\ L} = \boxed{}$$

Over the toxic level for lithium, **advisory needed**

If converted the toxicity level, 16 ppm = $\frac{0.016\ g}{L}$

Question 13

Espresso

$$0.175\% = \frac{0.175\ g}{100\ mL} \qquad 0.044L = 44\ mL$$

$$\frac{0.175\ g}{100\ mL} = \frac{x}{44\ mL}$$

$$x = 0.077\ g\ or\ 77\ mg$$

Chai Latte

$$350\ mL = 0.350\ L$$

$$\frac{0.28\ g}{1L} = \frac{x}{0.350\ L}$$

$$x = 0.098\ g\ or\ 98\ mg$$

Mr Graham should choose the Chai Latte

Question 13

Americano

$$0.044\% = \frac{0.044\ g}{100\ mL} \qquad 0.525\ L = 525\ mL$$

$$\frac{0.044\ g}{100\ mL} = \frac{x}{525\ mL}$$

$$x = 0.231\ g\ or\ 231\ mg$$

Mr Graham should choose the Americano

Chai Latte

$$350\ mL = 0.350\ L$$

$$\frac{0.28\ g}{1L} = \frac{x}{0.350\ L}$$

$$x = 0.098\ g\ or\ 98\ mg$$

Question 14

Which requires more solvent, making a 6.8% m/v solution with 2. 176 g of solute (A), or making a 1.36 g/L solution with 0.085 g of solute (B)?

$$6.8\% = \frac{6.8\ g}{100\ mL}$$

$$\frac{6.8\ g}{100\ mL} = \frac{2.176\ g}{x}$$

$$x = 32\ mL$$

Question 14

Which requires more solvent, making a 6.8% m/v solution with 2. 176 g of solute (A), or making a 1.36 g/L solution with 0.085 g of solute (B)?

$$\frac{1.36\ g}{1\ L} = \frac{0.085 g}{x}$$

$$x = 0.0625\ L = 62.5 mL$$

Solution B (D.E)/Solution A (Order) requires more solvent