**Lesson 1 – Physics**

**Progress Check**













**Mastery Questions**

1. Prism (1)
2. Red (1)
3. Colours can be too **similar**

Not all elements change the colour

Only **metal ions** can be used

Some compounds are **unsafe** to test

**Qualitative** data

(Each point worth 1 mark – maximum of 3)

1. Flame Test:

Colours can be too **similar**

Not all elements change the colour

Only **metal ions** can be used

Some compounds are **unsafe** to test

**Qualitative** data

Spectroscopy:

Produces a **spectrum** or component colours

Spectrum is **unique**

**Quantitative** data

(Each point worth 1 mark – maximum of 5)

**Deliberate Practice**

**Q1.**

(a)     decreases

*correct order only*

**1**

increases

**1**

(b)     (i)      intensity (of transmitted light ) depends on thickness  
**or**  
to enable a valid comparison  
**or**  
it is a control variable

*accept absorption depends on thickness*

*it would affect the results is insufficient*

*fair test is insufficient*

**1**

(ii)     transmits the least light  
**or**  
absorbs the most light

*accept very little light is transmitted*

*do****not****accept transmits none of the light*

*do****not****accept absorbs all of the light*

*any reference to heat negates this mark*

**1**

**[4]**

**Q2.**

electron

**1**

atom

**1**

nucleus

**1**

orbit

**1**

**[4]**

**Q3.**

1. atoms with the same number of protons

*allow atoms of the same element*

**1**

but with a different number of neutrons

**1**

1. protons = 11

**1**

neutrons = 12

**1**

1. electrons falling to a lower energy level

**1**

**[5]**

**Lesson 2 – Chemistry**

**Progress Check**

| John Newlands | 1864 |
| --- | --- |
| Dmitri Mendeleev | 1869 |
| John Dalton | 1806 |

**Mastery Questions**

1. Dmitri Mendeleev (1)
2. Increasing atomic number (1)
3. Period 5 (1)
4. **Hydrogen** is in a group with the halogens

allow whereas in the modern version H is on its own

Only **seven groups** as there is no Group 8/0 so no noble gases, therefore fewer elements

Halogens are in **Group 1**

allow but are located in Group 7 in the modern table

Other elements are in one **group higher**

allow for example oxygen is in Group 7 instead of Group 6

The modern table only has two elements in the **top period**

The modern table does **not** have the elements in order of **atomic mass**

allow but in order of increasing atomic number

Metals and non-metals **not** at opposite ends

(Each point worth 1 mark – maximum of 3)

**Deliberate Practice**

**Q1.**

(a)     argon / Ar

**1**

(b)     (i)      0

**1**

(ii)     unreactive

**1**

**[3]**

**Q2.**

(a)     (i)      2,4 drawn (as dots / crosses / e–)

**1**

(ii)     Water (vapour) / steam

*allow hydrogen oxide / H2O*

*do****not****accept hydroxide*

**1**

**[2]**

**Q3.**

(a)      Cu

**1**

**2** CuO + C  ➔  **2** Cu + CO2

*allow 2 CuO + C  ➔  Cu2 + CO2 for****1****mark*

**1**

(b)     (i)      iron is more reactive (than copper)

**1**

iron is cheap(er than copper)

*allow cheaper****or****uses less energy than electrolysis*

**1**

(ii)     any **two** from:

•        copper / ions move **or** are attracted to the negative electrode / *cathode*

•        where they are reduced **or** gain (two) electrons

•        *where they form copper (metal / atoms)*

**2**

**[6]**