**Paper 2 Core Practical Revision**

**Core Practical: Light Intensity and Photosynthesis (page 47 in revision guide)**

You used algae balls to investigate photosynthesis at different distances from the lamp. Hydrogen carbonate indicator was used to measure the pH of the solution.

Hydrogen carbonate indicator is a red colour. In high concentrations of carbon dioxide it turns red and in low concentrations of carbon dioxide it turns purple.

Write the word equation for photosynthesis

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Identify the independent variable

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Identify the dependent variable

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Identify the control variables in the investigation

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Describe using the diagram what you would expect the results to show

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State the colour you would expect the hydrogen carbonate indicator to be nearest the lamp

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Explain why the solution has turned this colour

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Describe how you would investigate how temperature affects the rate of photosynthesis

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**Core Practical Biology: Respiration rates (page 65 in revision guide)**

You investigated how temperature affected the rate of respiration

Write the word equation for aerobic respiration

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Identify the independent variable

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Identify the dependent variable

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Identify two control variables

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Explain why one of your control variables needs to be controlled

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Explain the role of soda lime in your investigation (2 marks)

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State an appropriate control in your investigation (1 mark)

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Explain the need for controls in the investigation (1 mark)

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| Temperature (oC) | Distant moved by coloured liquid in 5 minutes (mm) |
| 20 | 18 |
| 25 | 28 |
| 30 | 36 |

Describe what the results show from the investigation

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Explain the results of the investigation

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Calculate the **rate** at 25oC ***(Hint: Look at the units)***

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Explain how the student’s results from above can be improved

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**Core practical Biology: Quadrats and Transects (page 68 in revision guide)**

Name 3 abiotic factors

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Describe how to carry out a belt transect

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Results are from a belt transect carried out by a student.

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| Distance from tree (m) | Number of daisies |
| 0 | 1 |
| 1 | 4 |
| 2 | 6 |
| 3 | 10 |
| 4 | 15 |

Describe the effect of distance from the tree on the number of daisies

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Suggest an explanation for this effect

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Explain how the student could improve their investigation

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In a 1m2 quadrat there are 25 limpets. The total area of the shore is 500m2. Extimate the total population size of limpets.

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**Core Practical Chemistry: Investigating Reaction Rates (page 129 + 130 in revision guide)**

State 4 factors that affect the rate of a reaction

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2.
3.

**Part 1: Investigating the reaction rates measuring the production of a gas**

Write the word equation when calcium carbonate reacts with hydrochloric acid

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A student filled a beaker to 50cm3 line and added it to a conical flask. He then added 4 large pieces of marble chips and added a bung on. He measured the gas produced every 20 seconds in an inverted measuring cylinder. He then repeated the experiment using 4 small pieces of marble chips

State and explain 2 ways the student could improve the method

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The students results are shown below. **Sketch what the graph would look like with the smaller chips.**



Describe how you would calculate the reaction rate in cm3/second using the graph

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Explain how surface area affects the rate of a reaction

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Explain how and weighing scale could be used to investigate the rate of reaction between calcium carbonate and hydrochloric acid

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Describe a method to investigate how concentration affects the rate of reaction between calcium carbonate and hydrochloric acid

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Explain how concentration affects the rate of a reaction

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**Part 2: Investigating reaction rates observing a colour change**

Na2S2O3 (aq) + 2HCl (aq) 🡪 2NaCl (aq) + H2O (l) + S (s)

Explain which product causes the colour change

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Explain how temperature affects the rate of a reaction

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**Core practical Physics: Investigating resistance (page 186 + 189 in revision guide)**

Part 1: Investigating resistance in a filament lamp and a resistor

Describe how to measure current and potential difference in a circuit. You may use a labelled diagram (4 marks).

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State the equation that links current, potential difference and resistance

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Sketch a diagram on how you would measure the current and potential difference in a resistor.

Results below show the potential difference and current through a resistor

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| **Potential difference (V)** | **Current flowing through resistor (A)** |
| 0 | 0 |
| 1 | 0.3 |
| 2 | 0.6 |
| 3 | 0.9 |
| 4 | 1.2 |

Calculate the resistance of the resistor

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Describe the relationship between potential difference and current in a fixed resistor

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**Core practical Physics: Investigating resistance**

Part 2: Investigating resistance of a filament lamp in a series and parallel circuit

Describe how current flows in a series circuit

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Describe how current flows in a parallel circuit

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The potential difference across the battery was 6V. If the potential difference across bulb 1 was 3.5V, state the potential difference across bulb 2.

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Describe what would happen to the current if another filament lamp is added to this circuit

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The potential difference across the battery in circuit E was 9V. If the potential difference across bulb 1 was 9V, state the potential difference across bulb 2.

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In circuit E the current leaving the battery is 0.82A. The bulbs in the circuit are identical. State the ammeter reading of bulb 1 and 2.

Bulb 1: ……………………………. Bulb 2: …………………………………

Explain which circuit would have the lowest resistance

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**Core practical Physics: Investigating densities (page 200 in revision guide)**

State the equation to calculate density

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Explain in terms of particles why a solid is more dense than a liquid

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**Method:**

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| Describe how to calculate the density of a cube | Describe how to calculate the density of an object with an irregular shape |
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Describe how calculating the density of a liquid would differ from calculating the density of a solid

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0.5kg of water fills a 500cm3 flask. Calculate the density in g/cm3.

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A piece of wood is 1m long, 20cm wide and 5cm thick. It has a mass of 7kg. Calculate the density in kg/m3

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**Core Practical: Investigating water (page 202 + 203 in revision guide)**

Define specific heat capacity

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State the equation that links specific heat capacity, mass, temperature change and thermal energy

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Describe an experiment on how the specific heat capacity of water could be measured

***Think about the equation and what measurements you would need for it***

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Describe why a polystyrene cup is used

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Calculate the specific heat capacity of water when a student heated 500g of water. The joulemeter reading was 22kJ and the temperature change went from 20 to 30oC.

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The specific heat capacity of water is 4181 J/kg/oC. Explain why results obtained from this experiment are likely to be higher than this value.

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Define specific latent heat

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State the equation that links change in thermal energy, mass and specific latent heat.

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Sketch a graph to show the temperature changes when ice melts

**Core practical Physics: Investigating springs (page 206 in revision guide)**

State the equation that links extension, spring constant and force.

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Describe how to set equipment up to investigate the effect of force on the extension of a spring

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Describe the relationship shown from the data collected

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Calculate the spring constant of the spring in the graph (Hint: Think about units)

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Sketch on the graph the results of a spring with a **higher** spring constant

Explain the difference between the length of a spring and the extension

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Calculate the spring constant when a spring is stretch 50cm with 5N of force.

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Calculate the energy stored in a spring of spring constant 0.9N/m when it is extended by 63cm.

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