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**LANGDON PARK SIXTH FORM**

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| **Subject: Physics** | **Year: Y13** | **Topic: 3.7.4 Capacitors** |

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| ***What and Why*** “What is a capacitor? What are their uses in industry? Why are capacitors important? They can be used as an energy store for camera flash; car audio for the amplifier; radio tuning” |

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| **Key terms**AmpereCapacitanceChargeCoulomb | CurrentDielectricDischargeElectric fieldEnergy | Exponential decayExponential functionFaradParallel platePolar molecule | Potential differenceRelative permittivityResistorTimeTime constant |

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| **Specification point** | **Pre-reading** | **Application and Assessment (date)** | **Home learning**  | **Extension – Cultural Capital and Reading** |
| **3.7.4.1:** I can define capacitance.**3.7.4.2**: I can describe the action of a simplepolar molecule that rotates in the presence of an electric field and apply the dielectric equation. **3.7.4.3:**  I can Interpretation of the area under a graph of charge against pd.**3.7.4.4:**  I can graphically represent the charging and discharging of capacitors through resistors for *Q*, *V* and *I* against time for charging and discharging and interpret the gradients and areas under graphs. I can apply the exponential equation for dischargeand charging of a capacitor.I can calculate the time constant and the time to halve. | Use the Oxford AQA A2 textbook p.110 to 121. Look at other textbooks in the library for alternative ideas, explanations and diagrams.**YouTube Videos:**(1) [How Capacitors Work](https://www.youtube.com/watch?v=5hFC9ugTGLs)(2) [Exponential decay of a capacitor](https://www.youtube.com/watch?v=-KY8DTCkN6s) **Websites:**[**https://physicsabout.com/capacitance/**](https://physicsabout.com/capacitance/)[**https://www.s-cool.co.uk/a-level/physics/capacitors/revise-it/charging-and-discharging**](https://www.s-cool.co.uk/a-level/physics/capacitors/revise-it/charging-and-discharging) | **Practicals:**(1) Required practical 9: Investigating the discharge of a capacitor(2) Investigating the relationship between energy and pd for a capacitor**Assessment**:Minitest Capacitors (4th week Nov) | (1) Plot a graph of Energy v pd from experiment and write a conclusion. Calculate the uncertainty in pd and add error bars to the graph Make notes on each topic and complete the exam style practice questions | (1) Find out about exponential decay in real life. (2) Find out how capacitors are used in industry**Reading:**Leonhard Euler: MathematicalGenius in the EnlightenmentBy Ronald S. Calinger |

**Pre-assessment content review**

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| I feel secure in | I need to focus on | My action plan |

**Pre-assessment skills review**

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| I feel secure in | I need to focus on | My action plan |

**Post-assessment review**

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| Weaknesses in content knowledge | Skills I need to focus on | My action plan |
| Retest / review – teacher and student comment |

**Revision planning**

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| Spec point | Notes complete | Revision materials | Past paper Qs  | Timed conditions |
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