Separate Physics Revision plan – Edexec GCSE 9-1

<table>
<tr><th></th><th>w/c</th><th>Revise</th><th></th><th></th></tr>
<tr><td>15</td><td>15.1.18</td><td>PAPER 1 – Motion and forces</td><td>• Distance/time and velocity/time graphs
• Acceleration
• Mass and weight
• Newton's laws
• Collisions
• Momentum</td><td>Revision guide / workbook: p.2 – p.16

1. The data below shows some data from a train journey. Plot it as a velocity/time graph and join the points with straight lines. Label your graph with all of the things that you can tell are happening at each stage. Calculate the distance travelled.

<table><tr><th>Time (s)</th><th>Velocity (m/s)</th></tr><tr><td>0</td><td>0</td></tr><tr><td>20</td><td>10</td></tr><tr><td>30</td><td>30</td></tr><tr><td>60</td><td>30</td></tr><tr><td>120</td><td>0</td></tr></table>
2. State all 3 of Newton's laws.
3. Explain, including an example calculation, the relationship between an unbalanced force and acceleration.
4. Describe the forces acting on a satellite in a circular orbit around earth. Explain why its velocity is always changing.
5. Use the momentum equation to explain why it takes a very large oil tanker several miles to come to a stop.
6. Explain what 'conservation of momentum' means.

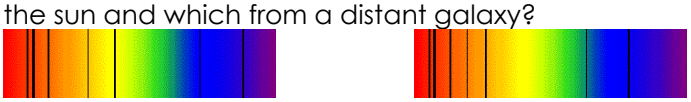
Core practical:
Investigating acceleration</td></tr>
<tr><td rowspan="2">14</td><td rowspan="2">22.1.18</td><td>PAPER 2 – Forces and their effects</td><td>• Vector diagrams
• Rotational forces</td><td>Revision guide / workbook: p.73 p.78

1. Draw 3 free body diagrams showing a car at rest, accelerating forwards, and at a constant speed.
2. Explain how to calculate a moment (turning force on an object). What is the unit?</td></tr>
<tr><td>PAPER 2 – Energy and work</td><td>• Work and power</td><td>Revision guide / workbook: p.71 – p.72

1. Define work done and state the unit.
2. Define power and state the unit.
3. Describe how to calculate mechanical power.</td></tr>
<tr><td>13</td><td>29.1.18</td><td>PAPER 1 – Conservation of energy</td><td>• Energy stores and transfers
• Energy efficiency
• Keeping warm
• Stored energies
• Renewable and non-renewable resources</td><td>Revision guide / workbook: p.17 – p.22

1. Name 6 types of energy stores.
2. Describe the energy transfers taking place when person rides a bicycle.
3. Draw a Sankey diagram for an incandescent light bulb, and for an energy saving light bulb.
4. What are the advantages and disadvantages of using non-renewable resources such as coal, oil and gas to generate electricity?
5. Draw a cross section of a thermos flask. Explain how it prevents heat loss by conduction, convection, and radiation.</td></tr>
</table>

12	5.2.18	**PAPER 1 – Waves**	• Wave properties and wave speed • Refraction, reflection, and diffraction • Ears and hearing • Ultrasound and infrasound	*Revision guide / workbook: p.23 – p.36* 1. Draw one full transverse wave. Label the diagram to show the wavelength and amplitude of the wave. 2. Define the *frequency* and *time period* of a wave. 3. Describe a method for calculating the speed of sound waves in air. 4. Describe how ultrasound scanning produces an image of a foetus. Suggest why ultrasound is used instead of x-rays. **Core practical:** **Investigating waves**
11	12.2.18	**PAPER 1 – Light and the electromagnetic spectrum**	• Ray diagrams • Colour • Lenses • Electromagnetic waves • The electromagnetic spectrum • Uses of long and short wavelengths • Dangers of electromagnetic radiation • Radiation and temperature	*Revision guide / workbook: p.37 – p.44* 1. Draw a ray diagram to show a light ray reflecting off a plane mirror. Label the ray, mirror, normal, angle of incidence, and angle of reflection. 2. Draw a ray diagram of a light ray passing through a glass block. Label the normal, angle of incidence, angle of refraction at *both* boundaries**.** 3. Sketch the ray diagrams of a convex and a concave lens. 4. Define the terms: focal length, diverging lens, converging lens, real image, virtual image 5. Draw and label an electromagnetic spectrum (7 different sections) in the correct order. 6. For each type of EM wave: a. Describe one use of the wave b. One danger of the wave **Core Practicals:** • **Investigating refraction** • **Investigating radiation**
10	26.2.18			
9	5.3.18	**PAPER 1 – Radioactivity**	• Atomic models • Inside atoms • Electrons and orbits • Background radiation • Types of radiation • Radioactive decay • Half-life • Using radioactivity • Dangers of radioactivity • Radioactivity in medicine • Nuclear energy • Nuclear fusion • Nuclear fission	*Revision guide / workbook: p.45 – p.63* *1.* Using diagrams compare and contrast Rutherford's model of the atom with the plum pudding model. 2. Describe the 3 main types of ionising radiation including what they are blocked by, and how strongly ionising they are. *3.* Describe a use of alpha, beta, and gamma radiation. *4.* Is an alpha or beta source more dangerous if ingested (swallowed or breathed in)? Explain why. *5.* Sketch a graph of the activity of a radioactive source over time, and show how it could be used to calculate the half-life of the source. 6. Draw a labelled diagram to show how nuclear fission of a nucleus of Uranium-235 releases energy. *7.* Explain the conditions needed for nuclear fusion, and why we cannot use fusion to provide electricity at the moment.
8	12.3.18			

7	19.3.18	PAPER 1 – Astronomy	• The solar system • Gravity and orbits • Life cycles of stars • Red-shift • Origins of the universe	*Revision guide / workbook: p.64 – p.70* 1. How do the 2 spectra below show red shift? Which is from the sun and which from a distant galaxy?  2. How does cosmic microwave background radiation support the big bang theory?
6	26.3.18	PAPER 2 – Electricity and circuits	• Electric circuits • Current and potential difference • Resistance • Resistance in different components • Transferring energy • Electrical power • Electrical safety	*Revision guide / workbook: p.79 – p.92* 1. Draw an example of a series and a parallel circuit including a power supply, 3 lamps, an ammeter and a voltmeter. 2. Sketch the IV graphs of a diode, fixed resistor, and filament lamp. Draw the circuit symbol for each. 3. What equation links current, voltage, and resistance? Write out and rearrange. 4. Describe how the resistance changes in a thermistor as the temperature / LDR as the light intensity increases. Draw the circuit symbol for each. 5. Write out 2 equations for electrical power. 6. Explain the role of circuit breakers in your house. **Core Practicals:** **Investigating resistance – series and parallel / different components**
5	16.4.18			
4	23.4.18	PAPER 2 - Static electricity	• Charges and static electricity • Dangers and uses of static electricity • Electric fields	*Revision guide / workbook: p.93 – p.97* 1. Draw the electric field around a point charge. Include the direction of each field line. 2. Draw the field between 2 charged plates. Include direction on each field line. 3. Describe one use and one danger of static electricity.
		PAPER 2 – Magnetism and the motor effect	• Magnets and magnetic fields • Electromagnetism • Magnetic forces	*Revision guide / workbook: p.98 – p.101* 1. Describe 2 ways in which the magnetic field around a wire can be changed. 2. What is the motor effect? 3. What equation describes the size of the force caused by the motor effect?
3	30.4.18	PAPER 2 – Electromagnetic induction	• Electromagnetic induction • The national grid • Transformers and energy	*Revision guide / workbook: p.102 – p.106* 1. Describe the differences between an alternator and a dynamo. 2. Draw a labelled structure of a transformer and describe the difference between a step up and a step down transformer. 3. Explain how transformers are used in the national grid.

2	7.5.18	PAPER 2 - Particle Model	• Particles and density • Energy and changes of state • Energy calculations • Gas temperature and pressure • Gas pressure and volume	*Revision guide / workbook: p.107 – p.114* 1. Draw a labelled diagram showing the heating curve of water, explaining each section. 2. Define the terms 'latent heat of melting' and 'latent heat of evaporation'. 3. Explain why a bicycle pump becomes warm as you use it. Link the key terms *pressure, volume, and temperature*. 4. Draw particle diagrams for a solid, liquid, and gas. Use them to explain: a. why liquids and gases can flow. b. why solids and liquids are incompressible. **Core practicals:** **Investigating densities** **Investigating heating water**
1	14.5.18	PAPER 2 – Forces and matter	• Bending and stretching • Extension and energy transfers • Pressure in fluids • Pressure and upthrust	*Revision guide / workbook: p.115 – p.120* 1. Sketch the force-extension graph for a spring and a rubber band on the same axes. Explain the difference in their shapes. 2. Calculate the energy stored when a spring with spring constant 175 N/m is stretched by 60 cm. 3. Draw a diagram to show the forces acting on a floating ship. Explain how the upthrust on the ship could be calculated. **Core practical:** **Investigating springs**
			Practice paper 1 – 1PH0 / 1H	
			Revision workbook – timed test 2	

21st May 2018. Paper 1 (Written paper – 1 hour 45 minutes, 100 marks)

Motion and forces
Conservation of energy
Waves
Light and the electromagnetic spectrum
Radioactivity
Astronomy

11th June 2018. Paper 2 (Written paper – 1 hour 45 minutes, 100 marks)

Energy – forces doing work
Forces and their effects
Electricity and circuits
Static electricity
Magnetism and the motor effect
Electromagnetic induction
Particle model
Forces and matter