

## SCHEME OF WORK

**DEPARTMENT: Physics**

**COURSE: PHB**

**Tutor A**

**LEVEL: A level Year 1**

**BOARD: AQA**

**CODE: 7408**

### Notes

Textbook references are from AQA Physics – Breithaupt. The assignments column serves as a guide only; students may find this useful as a source of additional practice questions, or to assist with catching up on work missed. Supporting experimental work will be supervised by tutor A and consist of introductory experiments, individual experiments completed on a 'circus' basis and more investigatory exercises. Practical work embodies the content of section 3.1 'Measurements and their errors'

WEEK & TUTOR	ROUTE THROUGH THE SPECIFICATION BY TOPIC or UNIT	LEARNING AND TEACHING ACTIVITIES (Highlighting differentiation)	ASSIGNMENTS	EDUCATIONAL RESOURCES USED (Type and Location)
<b>Tutor A</b> 1 – 4	<u>3.4.2 Materials</u> Bulk properties of solids. Density, Hooke's law, elastic limit, tensile strain and tensile stress. Elastic strain energy, breaking stress. Energy Stored. Description of plastic behaviour, fracture and brittleness; interpretation of simple stress-strain curves. The Young modulus. Use of stress-strain graphs to find the Young modulus.	Experiment: Measurement of Young Modulus, Elastic properties of rubber	Text P. 162 – 171 Summary Qu. P. 163, 166, 169, 171 Exam Qu. P. 172 - 173 Practical reports	Demonstration apparatus; textbooks; problem books  Lab apparatus; reference worksheets / GO

5– 11	<p><u>3.3.1 Waves</u>  Progressive Waves.  Oscillation of the particles of the medium; amplitude, frequency, wavelength, speed, phase, path difference.  <math>c = f \lambda</math>  Longitudinal and transverse waves.  Characteristics and examples, including sound and electromagnetic waves.  Polarisation as evidence for the nature of transverse waves; applications e.g. Polaroid sunglasses, aerial alignment for transmitter and receiver. Stationary waves, formation from two travelling waves, nodes and antinodes.</p>	Experiments: Microwave experiments, Properties of stationary waves on a taut wire / string	Text P. 174 - 185 Summary Qu. P. 175, 177, 179, 181, 183, 185 Practical reports Exam Qu. 186 – 187	Demonstration apparatus; textbooks; problem books; video Lab apparatus; reference worksheets / GO
12 – 15	<p><u>3.3.2 Refraction, Diffraction and Interference</u>  Refraction at a plane surface.  Refractive index, total internal reflection, critical angle.  Fibre optics – step index fibres, application to communications.  Interference, the concept of path difference and coherence, the laser as a source of coherent monochromatic light, double-slit systems, fringe spacing.  Diffraction, appearance of the diffraction pattern from a single slit, the plane transmission diffraction grating, applications – spectral analysis of light from stars.</p>	Experiments: Young's slits, Measurement of wavelength with a diffraction grating.	Text P. 188 – 207 Summary Qu. P. 189,192, 195, 198, 201, 204, 207 Exam Qu. 208 - 209 Practical reports	Demonstration apparatus; textbooks; problem books; video Lab apparatus; reference worksheets / GO

16 – 18	<u>3.5.1 Current Electricity</u> Charge, current and potential difference. Resistance. Current / voltage characteristics; ohmic conductor, semiconductor diode and filament lamp. Ohm's law.	Experiment: Investigation of the parallelogram of forces	Text P. 97 – 107 Summary Qu. P. 100, 103, 107, 108 – 109 Text P. 90 – 96 Summary Qu. P. 93, 96 Exam Qu. P. 110 - 111	Textbooks; problem books
19	Resistivity. Effect of temperature on the resistance of metal conductors and thermistors, temperature sensors. Superconductivity and applications.	Problem solving Experiment: I/V characteristics for various components	Text 46 – 55 Summary Qu. P. 47, 49 Practical reports	Demonstration apparatus; textbooks; problem books  Lab apparatus; reference worksheets / GO
20 – 23	Circuits. Resistors in series and parallel. Energy and Power. Conservation of charge and energy in simple dc circuits.		Text P. 58 – 63 Summary Qu. P. 60, 63	Demonstration apparatus; textbooks; problem books Demonstration apparatus; textbooks; problem books
24	The potential divider Use with variable resistors, thermistors and LDRs.	Problem solving Experiments: Resistivity of conducting putty, Temperature coefficient of resistance for copper and	Text P. 50 – 55 Summary Qu. P. 52, 55 Exam Qu. P. 56 - 57 Practical reports	Lab apparatus; reference worksheets / GO  Demonstration apparatus; textbooks; problem books

		iron, Variation of resistance with temp. for a thermistor		
25-26	Electromotive force and internal resistance. Applications.	Group practical work  Problem solving Experiment: Investigation of loading a cell	Text P. 70 – 71 Summary Qu. P. 71	Locktronics apparatus; worksheets; textbooks
27 – 28	<u>3.7.5.5 Alternating currents</u> Sinusoidal voltages and currents, root mean square, peak and peak-to-peak values. The oscilloscope. Use of an oscilloscope as a dc and ac voltmeter, to measure time intervals and frequencies and to display ac waveforms.	Problem solving Experiment: Use of signal generator and CRO.	Text P. 64 – 69 Summary Qu. P. 66, 69 Exam Qu. P. 72 - 73 Practical reports	Demonstration apparatus; textbooks; problem books  Lab apparatus; reference worksheets / GO
29 – 31	Revision.		Text P. 74 – 79 Summary Qu. P. 76, 79 Exam Qu. P. 80 - 81 Practical reports Exam Qu. P. 82 – 87 Exam Qu. P. 208 - 215	Demonstration apparatus; textbooks; problem books Lab apparatus; reference worksheets / GO Revision handbooks / past questions