AQA GCSE Physics Student Checklist

P15 Electromagnetism

Name ..... Class ..... Date .....

Lesson	Aiming for 4		Aiming for 6		Aiming for 8	
P15.1 Magnetic fields	I can state the names of the poles of a magnet.	☐	I can sketch the shape of a magnetic field around a bar magnet.	☐	I can describe the regions in a magnetic field where magnetic forces are greatest using the idea of field	☐
	I can describe the interaction of magnetic poles (attraction and repulsion).		I can describe how the shape of a magnetic field can be investigated.	☐	I can explain in detail how a magnetism can be induced in some materials.	☐
	I can list some magnetic and non-magnetic metals.		I can compare the Earth's magnetic field to that of a bar magnet.	☐	I can plan in detail how the strength of a magnetic field can be investigated.	☐
P15.2 Magnetic fields of electric current	I can state that the magnetic field produced by a current carrying wire is circular.	☐	I can use the corkscrew rule to determine the direction of the field around a current carrying wire.	☐	I can determine the polarity of the ends of a solenoid from the direction of the current.	☐
	I can describe the effect of increasing the current on the magnetic field around a wire.		I can describe the shape of the field produced by a solenoid.		I can sketch the shape of the field surrounding a solenoid relating this to the direction of the current through the coil.	
	I can describe the effect of reversing the direction of the current in the wire.				I can plan a detailed investigation into the factors that affect the strength of the magnetic field around a solenoid.	
P15.3 Electromagnets	I can list some electromagnet devices.	☐	I can describe the structure of an electromagnet in simple terms.	☐	I can explain the effect of an iron core on the strength of an electromagnet in terms of the magnetic field.	☐
	I can state some uses of electromagnets.		I can describe the operation of simple devices that use electromagnets.		I can describe in detail the operation of an electric bell.	
	I can state the factors which increase the strength of an electromagnet.		I can investigate the factors that affect the strength of an electromagnet.		I can evaluate an experiment into the factors which affect the strength of an electromagnet.	

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P15.4 The motor effect		I can describe the operation of a moving-coil loudspeaker.	☐	I can describe and explain in detail the operation of a d.c. motor.	☐
		I can apply Fleming's left-hand rule to determine the direction of the force acting on a conductor.		I can perform calculations involving rearrangements of the equation $F = BIl$.	☐
		I can calculate the force acting on a conductor when it is placed in a magnetic field.		I can investigate the factors that affect the rotation of an electric motor.	☐
P15.5 The generator effect		I can describe electromagnetic induction in a wire.	☐	I can explain why relative movement of a wire through a magnetic field is required to cause induction.	☐
		I can identify the factors that affect the size of an induced current in a wire.		I can independently investigate the magnitude and polarity of a current induced in a solenoid when a magnet is moved in it.	
		I can identify the direction of current induced in a solenoid.		I can describe how a changing current in one coil can be used to induce a current in another.	
P15.6 The alternating current generator		I can describe the operation of an alternator and microphone in simple terms.	☐	I can describe the output of an alternator, linking this to the position of the coil to the magnetic field and the speed of rotation.	☐
		I can describe the operation of a d.c. generator.		I can describe the operation of a direct current generator and its output.	
		I can identify the period and peak output voltage for generators from an oscilloscope trace.		I can explain why the peak voltage of an a.c. generator is produced when the coil is parallel to the magnetic field lines.	

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P15.7 Transformers		I can describe the structure of a transformer.	☐	I can justify the choice of materials used to construct a transformer.	☐
		I can describe the operation of a transformer in simple terms.	☐	I can describe and explain the operation of a transformer in terms of induction and changes in magnetic	☐
		I can explain why transformers only operate with alternating currents.	☐	I can investigate the effect that changing the ratio of the input and output loops on a transformer has on the change in voltage.	☐
P15.8 Transformers in action		I can use the transformer equation to calculate input or output voltages for a transformer.	☐	I can apply the transformer equation in a wide variety of situations.	☐
		I can calculate the secondary current in a transformer.		I can use the relationship $V_P \times I_P = V_S \times I_S$ to calculate all variables.	
		I can measure the efficiency of a transformer.		I can measure the efficiency of a transformer and explain why this may not be 100%.	