

Qu No.		Extra Information	Marks
3.1	Magnetic field Current Force	Correct order only	1 1 1
3.2	Down onto the balance		1
3.3	From the front of the balance to the back of the balance		1
3.4	Reading would increase As the magnetic flux density would increase		1 1

Qu No.		Extra Information	Marks
4.1	Arrow showing anticlockwise movement of the current		1
4.2	Direction: Change direction of current / turn the battery around Speed: Change amount of current		1 1
4.3	Increase number of turns Increase the strength of the magnet		1 1
4.4	$F = BIL = 3 \times 10^{-2} \times 0.5 \times 0.04$ $= 6 \times 10^{-4} \text{ (N)}$		1 1

Qu No.		Extra Information	Marks
5.1	To step up voltage (across the cables)/decrease the current (through the cables) Reduces thermal energy transfer / Increases efficiency (in the cables) Then step down voltage (across the cables) / increase the current (through the cables) (near users)		1 1 1
5.2	One of: Politician is correct that magnetic field from underground cable drops off in short distance Or But it starts higher No link to safety in the graph / no health effects		1 1
5.3	Slope = $(5.4-6.0)/20$ $= -0.03 \text{ (/m)}$	Allow 0.03 for one mark	1 1

Qu No.		Extra Information	Marks
6.1	Transformers need alternating current / batteries produce direct current		1
6.2	Primary coil has fewer turns than secondary coil / secondary coil has more turns than primary coil Iron core		1 1
6.3	2800 / 700 = ? / 12 48 (V)		1 1

Qu No.		Extra Information	Marks
7.0			
Level 3:	A clear, coherent answer clearly linking the movement of the coil around the magnet to the changing current in the ammeter recognising the link between the frequency of the movement of the Earth and the frequency of the alternating current in the coil. Student uses correct scientific language throughout. No major errors in physics.		5-6
Level 2:	A clear answer, outlining the main points, but may be out of sequence. Some correct scientific language used with maybe a few minor errors in physics.		3-4
Level 1:	Isolated points with errors in physics and/or incorrect or inconsistent use of scientific language.		1-2
Indicative content			
	<p>No earthquake = no movement so no current in the coil</p> <p>when there is an earthquake there coil moves relative to the magnet cutting the magnetic field lines so a current is induced in the coil the current will change direction each time the movement of the earth changes direction / alternating current.</p> <p>a larger earthquake likely to have a larger amplitude so higher (maximum) current</p>		