GENERATOR EFFECT MARK SCHEMES

Question 1

question	answers	extra information	mark
(a)	(magnetic) field / lines of force / flux rotate(s) / move(s) / through / in / cut(s) the coil	do **not** credit the idea that movement creates the magnetic field	1
	potential difference / p.d. / voltage <u>induced</u> across the coil	do **not** credit just current induced	1
(b)	any **one** from: • more powerful / stronger / lighter magnet • larger / more / bigger / lighter cups / with a bigger surface area • longer arms • lubricate the spindle • add more turns to the coil / nail	do **not** credit a bigger magnet	1
Total			**3**
Question 2			
(a)	greater	accept bigger / larger / higher	1
(b)	magnetic field / flux (1) cuts through the coil (1)	**or** the converse	3

	p.d varies as the distance between magnet and coil changes / as the magnet rotates (1)	accept voltage for p.d. accept varies for changes	
(c)	any **two** from: • move coil closer to the rim / wheel • more powerful magnet • more turns (on the coil) • coil with greater area • using an <u>iron</u> core	**or** smaller gap between rim / wheel and coil accept extra magnets do **not** accept more coils	2
Total			**6**
Question 3			
(a)	C → B (1st two boxes) D → A (end two boxes)	allow **1** mark for either linkage in any position	1 1

(b)	any **two** from: • more powerful / stronger magnet • smaller gap between coil and magnet • coil with more turns / longer coil • coil with bigger area	do **not** accept just bigger magnet accept more coils do **not** accept just bigger coil do **not** accept just more wire do **not** accept shake faster do **not** accept shake for longer	2
(c)(i)	the longer the torch is shaken, the longer the light lasts	accept the converse accept it is a (strong) positive (non-linear) relationship do **not** accept '.... are (directly) proportional ....'	1
(c) (ii)	any **two** from: • if this investigation is repeated the result would not be the same • rate / amplitude / angle of shaking could vary • personal judgement when the LED / light has 'gone out'		2

	• results / data / measurements have not been repeated / averaged		
Total			**7**
Question 4			
(a)	induced		1
(b)	any **two** from: • use the same (strength) magnet • the speed that the magnet is moved • the area of the turns • the magnetic pole being moved towards the coil (of wire)	same size magnet is insufficient accept movement of the magnet same type/length of wire is insufficient use the same voltmeter is insufficient	2
(c)(i)	voltmeter misread **or** number of turns miscounted	result misread is insufficient human error is insufficient allow the magnet was moved at a (slightly) different speed (into the coil) than for the other readings allow spacing between the turns had changed	1
(c)(ii)	line of best fit passing through all points except (100, 0.034)	line does not need to go back to origin	1

(d)	any **one** from: • can re-check data / readings • can take more readings (in a given time) • easier to identify maximum value	accept can go back to data can store data is insufficient automatically records data is insufficient accept is more accurate accept eliminates human error	**1**
Total			6