Generators – Past Paper Questions

1. (a) (i) (electromagnetic) induction 1

accept inducing current

(ii) swings to the left 1

*accept moves to left **or** moves the other way*

accept it will go to – 1

*do **not** accept moves back to zero*

(iii) no (induced) current when 1

accept no (induced) voltage

no (relative) movement between conductor and magnetic field 1

*do **not** accept wire not moving*

accept 'field' or 'magnet' for 'magnetic field'

accept no change of flux linkage

*accept conductor **or** wire not cutting the field*

accept no change in magnetic field around wire

*do **not** accept field not broken*

(b) one complete cycle shown 1

curve should be regular

*do **not** accept more than one cycle*

accept good sawtooth or square wave

[5]

2. (a) (i) pointer at 0 1

(ii) pointer to left of 0 1

Quality of Written Communication

The answer to this part of the question requires ideas in good English, in a sensible order with correct use of scientific terms. Quality of written communication should be considered in crediting points in the mark scheme.

Max. 3 if ideas not well expressed.

(b) magnet turns 1

changing magnetic field in coil **or** core 1

so induces a voltage 1

causing a current to flow 1

(c) any **three** from 3

- the speed of the bicycle increases

  accept turn magnet faster

- the strength of the magnetic field is increased

  accept use a stronger magnet
  *do **not** accept use a bigger magnet*

- the number of turns on the coil is increased

  accept increase number of coils

- the area of the coil is greater

  accept diameter of coil is increased

- use a smaller rotor
- move magnet closer to coil
- move the wire turns closer together

[9]

3. (a) (i) rotating coil cuts through magnetic field 1

accept relative movement between coil and magnetic field

voltage induced across coil 1

accept current induced in coil
*do **not** accept voltage induced through coil*

*any reference to current being put into coil negates these **2** marking points*

slip rings rotate / turn with the coil 1

accept slip rings allow coil to rotate without tangling

brushes connect slip rings to circuit 1

accept allow (induced) current to flow

(b) twice the frequency/half the wavelength 3
(i.e. two and half cycles shown)

for 2 marks

else greater frequency/more cycles/shorter "wavelength"

for 1 mark

greater amplitude/height

for 1 mark

[7]