Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Mark Schemes

Q1.

(a) (i) current produces a magnetic field (around XY)

accept current (in XY) is perpendicular to the (permanent) magnetic field

1

(creating) a force (acting) on XY / wire / upwards

reference to Fleming's left hand rule is insufficient

1

(ii) motor (effect)

1

(iii) vibrate / move up and down

1

5 times a second

only scores if first mark point scores

*allow for **1** mark only an answer 'changes direction 5 times a second'*

1

(b) 0.005

*allow **1** mark for calculating moment of the weight as 0.04 (Ncm)*
and
*allow **1** mark for correctly stating principle of moments*
or
*allow **2** marks for correct substitution*
*ie F × 8 = 2 × 0.02 **or** F × 8 = 0.04*

3

[8]

Q2.

(a) 400 000

*allow **1** mark for correct substitution ie*

$$\frac{25000}{?} = \frac{800}{12800}$$

or

$$\frac{25}{?} = \frac{800}{12800}$$

2

volt(s) / V

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*an answer 400 gains **2** marks*

*an answer 400 kilovolts / kV gains **3** marks*

*although the unit mark is independent to gain **3** marks it must be consistent with the numerical value*

1

(b) any **one** from:

*do **not** accept any response in terms of heat insulation, safety or electric shock*

- (so that there is) no short circuit
- (so that the) current goes round the coil

  *do **not** accept electricity for current*
- (so that the) current does not enter the core

1

(c) (the alternating p.d. in the primary causes) an (alternating) current in the primary

reference to the current in the core negates this mark

1

(causes an) <u>alternating / changing</u> (magnetic) field in the (iron) core

1

<u>induces</u> (alternating) p.d. across the <u>secondary</u> (coil)

accept in / through or similar for across

accept current for p.d.

accept output (coil) for secondary (coil)

*to gain **3** marks the sequence must be correct*

1

[7]

Q3.

(a) (i) (laminated soft) iron

*do **not** accept steel*

1

(ii) produces a <u>magnetic field</u>

accept <u>magnetic flux</u>

which is alternating / changing / varying

and which induces / produces an alternating / changing potential difference across the <u>secondary</u> coil

accept current / voltage

3

(b) 3067 (V)

*allow all **3** marks for 3060 to 3070 (V)*

$V = \frac{230 \times 4000}{300}$ *gains **2** marks*

$\frac{230}{V} = \frac{300}{4000}$ *gains **1** mark*

3

[7]

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