Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) motor (effect)

1

(b) (i) wire kicks further (forward)

accept moves for kicks
accept moves more
accept 'force (on the wire) increased'

1

(ii) wire kicks back(wards) / into (the space in) the (horseshoe) magnet

accept moves for kicks
accept 'direction of force reversed'

1

[3]

Q2.

(a) (i) step-down (transformer) because fewer turns on the output/secondary (coil)

no credit for just 'step-down transformer'
accept '…less turns…'
*do **not** credit '…fewer coils…'*
***or** 'the p.d. across the input / primary will be greater than the p.d. across the output / secondary'*

1

(ii) to prevent a short (circuit)(through the turns of wire or through the core

*do **not** credit references to safety **or** heat (insulation)*

1

(iii) (easily) magnetised (and demagnetised)

accept '(it's) magnetic'
*do **not** accept 'because it's a conductor'*

1

(b) 2250

correct substitution

eg $\frac{150}{p.d.across secondary} = \frac{500}{7500}$ *gains **1** mark*

***or** appropriate transformation*

eg (p.d. across secondary =) $\frac{number\ of\ turns\ on\ secondary}{number\ of\ turns\ on\ primary}$
*× p.d. across primary gains **1** mark*

2

(c) any **two** from:

- to reduce the voltage / p.d. (of the domestic supply)
  ***or** to reduce to 230 V*
  allow 'to reduce to 240 V'
  *do **not** credit 'reduce current to 230V'*
- higher voltage difficult to insulate
- higher voltage (would) result in (fatal) electric shock
  ***not** just 'less dangerous'*
- domestic appliances are not designed for (very) high voltage (input) / (are designed) for 230V
  *do **not** credit 'to increase efficiency' / 'to save energy' do **not** credit just 'it's safer'*

2

(d) any **two** (1) each

- if the (local) power station breaks down / fails / demand / load exceeds supply

1

or words to that effect

- electricity / power can be switched from elsewhere in the system / from other power station(s)
  ***or** words to that effect*
- electricity can be generated in places remote from customers
  ***or** words to that effect*
- (in total) fewer power stations are needed
- power available in rural / remote areas
- National Grid allows for (better) control of supply and demand
  *do **not** credit just cheaper / more efficient / safer*

1

[9]

Q3.

(a) 10 500
*allow **1** mark for 75 × 32 200 ÷ 230*

2

(b) any **three** from:

- alternating current (a.c.) in the primary (coil)
- produces a **changing** magnetic field / flux (in the core)

- which is made of (laminated soft) iron
- this induces
  must be idea of inducing something in the secondary coil
- an alternating potential difference across the secondary coil
  accept voltage for potential difference

3

[5]