Name of the Student:_____
Max. Marks : 16 Marks **Time : 16 Minutes**

Mark Schemes

Q1.

60

*allow **1** mark for correct transformation*

2

[2]

Q2.

(a) (i) **one** of the following:

- increase number of turns on the secondary coil
- decrease number of turns on the primary coil

1

(ii) constructed in (thin) layers

1

(b) (i) transformers only work with a c

1

(ii) used to increase **or** decrease **or** change voltage **or** current

reducing the energy **or** heat **or** power loss (along the cables)

1

or reduce to safe domestic level

must be consistent with first answer

1

(iii) (several metres of) air gives good electrical insulation (between cables and earth)
or reduce chance of earthing **or** sparks **or** arcing
or to avoid people touching it

1

(c) (i) $\frac{\text{voltage across primary}}{\text{voltage across secondary}} = \frac{\text{no of turns in primary}}{\text{no of turns in secondary}}$

accept $\frac{VP}{VS} = \frac{NP}{NS}$

or $\frac{Vin}{Vout} = \frac{Nin}{Nout}$

1

(ii) Np = 4000

$$\frac{25(000)}{275(000)} = \frac{NP}{44000}$$ *for **1** mark*

2

(d) (i) resistance of cable decreases

1

(ii) convection (to the air)
or
conduction (to the air)
not radiation

1

[11]

Q3.

(i) away from magnet
arrow should be perpendicular to field lines and current as judged by eye

1

(ii) current in wire creates magnetic field around wire

1

two fields interact **or** combine giving a resultant force (on the wire)

1

[3]