Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Mark Schemes

Q1.

(a) any **one** from:

- too few turns / coils on the secondary
  allow number of turns / coils on the primary was increased

- p.d. across the primary was reduced
  ignore human error

1

(b) the p.d. (across the secondary) goes above 2V
allow p.d. across secondary is higher than p.d. across primary after 20 turns

1

(c) it increases (until the nails reach a constant temperature)

1

(d) $\frac{640}{4} = \frac{V_p}{1.75}$

1

$V_p = \frac{640 \times 1.75}{4}$

1

$V_p = 280$ (V)

1

$280 \times I_p = 336$
allow their calculated
$V_p \times I_p = 336$

1

$I_p = 1.2$ (A)
allow an answer that is consistent with their calculated value of V_p

1

or

$336 = I_s \times 1.75$ (1)

$I_s = \frac{336}{1.75}$ (1)

I_s = 192 (A) (1)

$$I_p = 192 \times \frac{4}{640} \quad (1)$$

allow

$$I_p = \text{their calculated } I_s \times \frac{4}{640}$$

I_p = 1.2 (A) (1)

allow an answer that is consistent with their calculated value of I_s

*an answer of 1.2 (A) scores **5** marks*

[8]

Q2.

(a) an idea used to explain observations and data

1

(b) different models may be appropriate in different situations

allow one particular model may not be able to explain all observations

1

(c) new (experimental) evidence / data

1

evidence cannot be explained using an existing model
or
predictions made using old model are shown to be incorrect

allow old model based on data now shown to be incorrect

1

new model explains new evidence
or
predictions made with new model are shown to be correct

1

a suitable example given
e.g. nuclear model of the atom replacing the plum pudding model

allow tectonic plates replacing static land masses

big bang theory replacing other theories for the creation of the universe

allow heliocentric model of solar system replacing geocentric model

1

(d) velocity / speed is slower in shallow water

1

so edge of wave (front) entering shallow water slows down

1

but the part of the wave (front) in deeper water continues at a higher speed (leading to a change in direction of the wave fronts)

allow one part of the wave (front) changes speed before other parts

allow an answer in terms of wave (front) travelling from

shallow to deep water

1

(e) every point on the wave (front) enters / hits the shallow water at the same time

1

and so every point slows down at the same time

allow changes speed for slows down

allow an answer in terms of wave (front) travelling from shallow to deep water

1

[11]