

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

Q1.

- (a) changes the sound wave(s)

to a varying **or** changing (electric) potential difference **or** p.d. **or** voltage
or current **or** to an irregular alternating current or a.c. **or** transfers
sound energy to electrical energy (1) mark is vibrations **or** pulses **or** of
sound **or** in air become electrical waves

*do not credit just 'to electricity' **or** 'to a.c'*

2

- (b) (i) decrease **or** reduce the amplitude
accept less amplitude nothing else added

1

- (ii) increase the frequency **or** decrease
wavelength
accept higher frequency nothing else added

1

[4]

Q2.

- (a) (i) more turns **or** waves per second
*accept spinning **or** turning **or** faster*

1

- (ii) less time spent cutting field lines
*accept shorter time in field **or** when the frequency increases (the
wavelength decreases)*

1

- (iii) more energy given
*accept more KE put in
accept a higher voltage produced
do not credit more power*

1

- (b) more coils

1

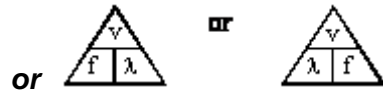
more powerful magnets
*accept put in better bearings
do not credit reduce friction **or** add soft iron core*

1

[5]

Q3.

- (i) (wave) speed = frequency
- \times
- wavelength

*or any correctly transposed version**accept $v = f \times \lambda$* *or transposed version**accept $m/s = 1/s \times m$* *or transposed version**but only if subsequently used correctly*

1

- (i) 325

1

metres per second

or m / s or 0.325 km/s for 2 marks

1

[3]**Q4.**

- (i) (incident) ray along the normal

or (incident) ray at 90° (to the surface)

1

- (ii) (A) total internal reflection

all three words required do not credit total internal refraction

1

- (B)
- EITHER**

angle of incidence is greater than the critical angle*or angle of incidence is greater than 42°*

2

ORangle of incidence is 45°

1

[4]**Q5.**

- Q is louder

- Q is higher (pitch/note but
- not
- frequency)

[if loudness and pitch both mentioned but direction wrong / absent credit 1 mark]

- louder because bigger amplitude/height

- higher pitch because higher frequency/shorter wavelength/waves closer together

- factor of 2 mentioned w.r.t either

*(NB converse answer for P)**each • for 1 mark***[5]**