

Name of the Student: _____

Max. Marks : 20 Marks

Time : 20 Minutes

Mark Schemes

Q1.

- (a) higher frequency
general properties / uses are neutral
or
shorter wavelength
*do **not** accept different frequency / wavelength / energy*
or
greater energy
1
- (b) the same (speed)
accept they travel at the speed of light
1
- (c) pass through / transmitted by the plastic / casing
1
- reflected by the metal / plates
*do **not** accept bounce / deflected etc for reflected*
*if neither marking point scores an answer reflected (back to boat / from the device) scores **1** mark*
1
- (d) (i) waves are not reflected from the walls
accept microwaves / radar for waves
*do **not** accept bounce / deflected etc for reflected*
or
only waves (reflected) from the device are detected
accept to stop reflected waves affecting results
1
- (ii) different types (of device) can be compared
fair test is insufficient
accept idea that only one variable is then changed
1
- (iii) so (measurements / results / scientists) are not biased towards one type / manufacturer of device/s
accept to avoid bias
accept so they are not biased
1
- (e) (i) any **two** from:

if temperature is mentioned rather than angle a maximum of **1** mark can be scored

- (for any angle) **A** values < **B** values
or converse eg **B** values are higher / better / stronger
- **A** values increase with (increasing) angle
accept weakest at 0° strongest at 15°
values go up is insufficient
- **B** values decrease with (increasing) angle
accept strongest at 0° weakest at 15°
values go down is insufficient
- **A** values do not vary as much (as **B** values)

2

(ii) **D**

mark is for the reason

reason cannot score if **D** is not chosen

values are always over 2(.0)

1

[10]

Q2.

1.4

allow **1** mark for correct substitution

ie $14 \div 10$

or

$28 \div 20$

[2]

Q3.

(a) converging (lens)

accept 'convex (lens)'

accept biconvex

1

(b) (principal) foci

accept 'focus' / 'focuses' / 'focis'

focal point(s)

1

(c) (i) formed where (real) rays (of light) intersect / meet / cross

accept rays (of light) pass through the image

accept 'image is on the opposite side (of the lens to the object)'

accept (construction) lines cross over

a response relating to a screen or similar is neutral

lines are solid and not dotted is neutral

1

(ii) inverted

accept any unambiguous correct indication

1

- (d) (i) smooth curve which matches the points
*judge by eye but do **not** accept point to point by ruler or otherwise*

1

- (ii) continuous

1

- (iii) as distance increases, magnification decreases
accept negative correlation
*a statement 'inversely proportional' is incorrect and limits maximum mark for this part question to **1***

1

further detail eg magnification falls steeply between 40 and 50 cm

or

magnification begins to level out after / at 70 cm

1

[8]