

Name of the Student: _____

Max. Marks : 17 Marks

Time : 17 Minutes

Mark Schemes

Q1.

- (a) (i) Ignore arrows on rays
perpendicular rays goes straight in and out
other ray refracts towards normal (not along)
emerges parallel incident ray (by sight) if refraction correct (ignore reflections)
for 1 mark each 3
- (ii) emergent angle marked Y if emerges parallel to right of normal
for 1 mark 1
- (b) straight ray to water surface refracts/bends
straight to eye/towards surface on right image correctly shown
or states the same mark prose only of diagram incomplete
any 3 for 1 mark each 3

[7]

Q2.

- (a) number of complete vibrations per second
for 1 mark 1
- (b) (i) correct trace (more waves), *ignore amplitude*
for 1 mark 1
- (ii) correct trace (higher amplitude), *ignore frequency*
for 1 mark 1
- (c) (i) higher
for 1 mark 1
- (ii) quieter
for 1 mark 1

[5]

Q3.

- (a) any two successive peaks labelled **W**

*accept any 2 points on same part of adjacent waves
correct by eye*

1

half 'height' of wave labelled **A**

correct by eye

N.B. at least one of the answers must be labelled

1

- (b) 0.2

correct answer with no working = 2

allow 1 mark for $s = f \times w$ or correct working i.e., 2×0.1

N.B. correct answer from incorrectly recalled relationship = 0

2

m/s (unit)

*independent mark do **not** allow mps **or** mHz*

1

[5]