**Waves**

**Multiple Choice**

1 – C

2 – B

3 – C

4 – D

5 – A

6 – A

7 – E

8 – A

9 – E

10 – A

11 – C

12 – C

13 – B

**Section 2**

1 a) f = N/t (1) =4/20 =0.2 Hz (1) v = fλ (1) = 0.2 x 12 (1) = 2.4 ms-1 (1)

b) Straight lines (1) Normal (1) Correct refraction (1)

|  |  |  |
| --- | --- | --- |
| P | **Q** | R |
| **R** | R | P |

2 a) 280 x 1.12 x 0.31 /0.25 (1) = 3.89 (1)

b) (1) for each correct row.

c) Acne treatment, forgery detection… (1)

3 a) Diagram has **angles** i and r correctly labelled (1)

b) Decreases (1) c) Gemstone B (1)

d) P=F/A (1) = 61000/1.1 x 10-5 (1) = 5.5 x 109 Pa (1)

4 a) Photodiode, blackened thermometer… (1) b) Gamma (1)

c) (i) λ=v/f (1) = 3 x 108/1.2 x 109 (1) = 0.25m (1) (ii) Microwaves (1)

5 OEQ. No understanding (0) Limited (1) Reasonable (2) Good (3)

6 a)(i) normal (1) (ii) angles i and r (1)

b)(i) 8° (1) (ii) 41° +/- 1° (1)

c) Get average/ avoid any dud results (1)

7 a)(i) f=1/T (1) = 1/2.5 (1) = 0.4 Hz (1)

(ii) Take time for more than 1 wave passing OR repeat and average (1)

b) v = fλ (1) = 0.4 x 8 (1) = 3.2 m (1)

c) Straight lines of regular wavelength (1) Curved edges (1) d) W