



Pearson Edexcel GCE Physics

Additional Support Worksheets: Answers

Contents

Answers.....1

1	The only correct answer is D $v=f\lambda = 2.5 \times 0.8 = 2.0 \text{ m s}^{-1}$	1
2	The only correct answer is C Compressions are regions of high pressure where particles are close together. <ul style="list-style-type: none"> • A is the opposite (rarefaction). • B confuses pressure amplitude with displacement amplitude (they are 90° out of phase). • D confuses standing waves with progressive waves. 	1
3	The only correct answer is B (90°) Half a wavelength corresponds to 180°	1
4	The only correct answer is B Coherent waves have a constant phase relationship which could be 0.	1
5	The only correct answer is A $v \propto \sqrt{T}$. So if $T \times 4 \rightarrow v \times 2$	1
6	The only correct answer is A $v = \sqrt{T/\mu} \rightarrow$ smaller $\mu \rightarrow$ larger v .	1
7	The only correct answer is C $P = IA = (1.0 \times 10^3)(2.0) = 2000 \text{ W}$	1
8	The only correct answer is C For TIR the angle of incidence must be greater than the critical angle and light must pass from a medium with higher refractive index to lower refractive index	1
9	The only correct answer is C $n_2 = \sin^{-1} \left(\frac{1.33 \sin 40^\circ}{1.5} \right) = 34.8^\circ$	1
10	The only correct answer is C $P = 1/f = 1/0.25 = 4 \text{ D}$	1
11	The only correct answer is A Correct: $P = P_1 + P_2 = 3 + (-2) = +1 \text{ D}$ <ul style="list-style-type: none"> • B (+6.0 D) assumes addition without considering the sign of the second lens. • C (-1.0 D) assumes the first lens is negative instead of positive. • D (-5.0 D) incorrectly adds magnitudes without considering sign. 	1

12	<p>The only correct answer is A</p> <p>B) virtual images cannot be projected on a screen. C) incorrect lenses. D) incorrect mirrors.</p>	1
13	<p>The only correct answer is B</p> <p>A Reflection is minor. C True only if slit \gg wavelength. D Huygens' principle says every point is a source.</p>	1
14	<p>The only correct answer is B</p> $d = \frac{1}{500 \times 10^{-3}} = 2 \times 10^6 \text{ m}$ $\sin \theta = \frac{d}{n\lambda} = \frac{2 \times 600 \times 10^{-9} \text{ m}}{2 \times 10^6 \text{ m}} = 0.6 \text{ so } \theta = 36.9^\circ$ <p>A: forgot to convert d from mm to m. C: swapped n and d in formula D: divided d by 2.</p>	1
15	<p>The only correct answer is A</p> <p>B: Uses $2meV$ in the denominator without sqrt. C: Incorrectly multiplies h instead of dividing. D: Inverts fraction; gives wrong units.</p>	1
16	<p>The only correct answer is C</p> <p>A the depth will decrease but not by half B it will diffract less D the speed is constant</p>	1
17	<p>The only correct answer is D</p> <p>Electron wave behaviour does not demonstrate the other properties.</p>	1
18	<p>The only correct answer is D (6)</p> <p>The electron can drop from -0.85 eV to -15 eV to -3.4 eV to $-13.6 \text{ eV} = 3$ transitions Or $0 - 0.85 \text{ eV}$ to -3.4 eV to $-13.6 \text{ eV} = 2$ transitions Or -0.85 eV to $-13.6 \text{ eV} = 1$ transition total 6</p>	1
19	<p>The only correct answer is A (8.0 cm a whole number of wavelengths path difference)</p> <p>All other interactions would lead to destructive interference as waves would meet in antiphase</p>	1

20	The only correct answer is B (charge) Charge is not included in the formula $\lambda = \frac{h}{mv}$	1
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