A-Level Edexcel

PHYSICS

UNIT 2(IAL)

2020 — 2025

Chapter 1	**Mechanics**	----------
Chapter 2	**Materials**	----------
Chapter 3	**Waves and Particle Nature of Light**	Page 1
Chapter 4	**Electric Circuits**	Page 132
Chapter 5	**Further Mechanics**	----------
Chapter 6	**Electric and Magnetic Fields**	----------
Chapter 7	**Nuclear and Particle Physics**	Page 223
Chapter 8	**Thermodynamics**	Page 227
Chapter 9	**Nuclear Decay**	----------
Chapter 10	**Oscillations**	Page 228
Chapter 11	**Astrophysics and Cosmology**	----------
	Answers	Page 229

1 – (WPH11/2(IAL)_Summer_2020_Q1) – *Waves And Particle Nature Of Light*

Waves can be represented on graphs of displacement against distance and displacement against time.

Which of the following properties can only be determined by combining information from both graphs?

☒ **A** amplitude

☒ **B** frequency

☒ **C** speed

☒ **D** wavelength

2 – (WPH11/2(IAL)_Summer_2020_Q2) – *Waves And Particle Nature Of Light*

Two waves from the same source arrive at a point with a path difference of $\frac{3\lambda}{8}$, where λ is the wavelength.

Which of the following is the phase difference of the waves at this point?

☒ **A** 34°

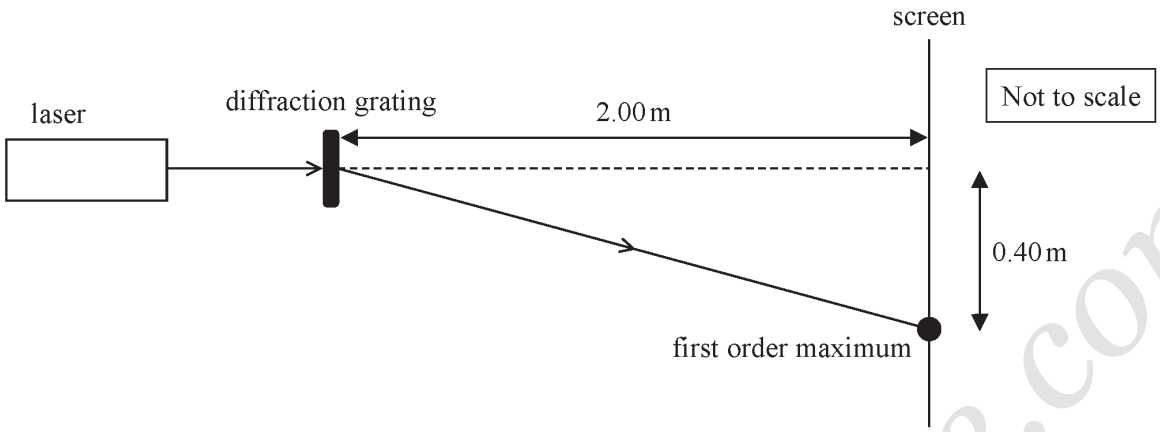
☒ **B** 68°

☒ **C** 135°

☒ **D** 270°

3 - (WPH11/2(IAL)_Summer_2020_Q3) - *Waves And Particle Nature Of Light*

A diffraction grating has 300 lines per mm. When laser light is directed towards the diffraction grating, a diffraction pattern is observed on a screen. The position of a first order maximum on the screen is shown in the diagram.



Which of the following calculations should be used to determine the wavelength, in mm, of the laser light used?

☒ **A** $300\sin\theta$ where $\theta = \sin^{-1}\left(\frac{0.40}{2.00}\right)$

☒ **B** $300\sin\theta$ where $\theta = \tan^{-1}\left(\frac{0.40}{2.00}\right)$

☒ **C** $\frac{\sin\theta}{300}$ where $\theta = \sin^{-1}\left(\frac{0.40}{2.00}\right)$

☒ **D** $\frac{\sin\theta}{300}$ where $\theta = \tan^{-1}\left(\frac{0.40}{2.00}\right)$

4 - (WPH11/2(IAL)_Summer_2020_Q5) - *Waves And Particle Nature Of Light*

Ultrasound has a number of different uses in medicine.

Which of the following is the main reason why ultrasound is not used to perform scans of the chest and lungs?

☒ **A** The air in the lungs causes most of the ultrasound to be reflected back.

☒ **B** The duration of the pulses of ultrasound limits the amount of detail that can be seen.

☒ **C** The wavelength of the ultrasound is too long.

☒ **D** Ultrasound can damage the lungs.

5 - (WPH11/2(IAL)_Summer_2020_Q8) - *Waves And Particle Nature Of Light*

Which of the following statements about waves is correct?

☒ **A** Both longitudinal and transverse waves can be polarised.

☒ **B** Neither longitudinal nor transverse waves can be polarised.

☒ **C** Only longitudinal waves can be polarised.

☒ **D** Only transverse waves can be polarised.

ANSWERS

1 – (WPH11/2(IAL)_Summer_2020_Q1) – *Waves And Particle Nature Of Light*

C

2 – (WPH11/2(IAL)_Summer_2020_Q2) – *Waves And Particle Nature Of Light*

C

3 – (WPH11/2(IAL)_Summer_2020_Q3) – *Waves And Particle Nature Of Light*

D

4 – (WPH11/2(IAL)_Summer_2020_Q5) – *Waves And Particle Nature Of Light*

A

5 – (WPH11/2(IAL)_Summer_2020_Q8) – *Waves And Particle Nature Of Light*

D

6 – (WPH11/2(IAL)_Summer_2020_Q11) – *Waves And Particle Nature Of Light*

a	Use of $n_1\sin\theta_1 = n_2\sin\theta_2$ with both 1.33 and 1.52 seen angle of refraction = 37° **Example of calculation** $n_1\sin\theta_1 = n_2\sin\theta_2$ 1.33 sin (43°) = 1.52 sin r r = 36.6°	(1) (1)	**2**
b	Use of sin C = 1/n critical angle = 61° **OR** Use of sin C = 1 / 1.14 (if ratio calculated in (a)) critical angle = 61° (Allow an ecf of n_1/ n_2 ratio from (a)) **Example of calculation** sin C = 1/n $C = \sin^{-1}$ (1.33/1.52) = 61.0°	(1) (1) (1) (1)	**2**