

2023 Ph H1 Q16

Section:

Particles and Waves

Topic:

Interference

Question Summary

Two coherent sources S1 and S2 produce an interference pattern. At point K, the path difference is 154 mm. Determine the wavelength of the waves.

Worked Solution

E — 30.8 mm

Final Answer

Path difference = $n\lambda$ (constructive interference at maxima).

So $\lambda = 154 \text{ mm} / n$.

From the options, only $\lambda = 30.8 \text{ mm}$ fits (since $154 / 30.8 = 5$, an integer order).

Revision Tips

- Maxima occur when path difference = $n\lambda$.
- Check which option divides evenly into the given path difference.
- Units: ensure consistent mm to mm.