

2017 Ph H1 Q11

Section: Particles and Waves

Topic: Interference

Question Summary

A student considers three statements about coherent sources: I: same velocity, II: same wavelength, III: constant phase relationship. Which are correct?

Worked Solution

Coherent sources must have the same frequency and a constant phase relationship.

Same wavelength follows from same frequency (in same medium).

Velocity is determined by the medium, not a condition of coherence.

So correct: II and III.

Final Answer

E — II and III only

Revision Tips

- Definition: Coherent sources = constant phase difference & same frequency.
- Same frequency \Rightarrow same wavelength in a given medium.
- Velocity depends on the medium, not coherence.