



Class 12 Physics | Wave Optics

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Huygens' principle treats each point on a wavefront as a source of:

- A. Only reflected rays B. Secondary wavelets
C. Material particles D. Static electric fields

2. A plane wavefront corresponds to:

- A. Diverging spherical rays only
B. Converging rays only
C. Parallel rays
D. No propagation

3. For sustained interference, sources must have:

- A. Same frequency and constant phase difference
B. Different frequencies always
C. Equal wavelengths but random phase
D. Equal intensities only

4. In Young's experiment, fringe width is:

- A. $\lambda D/d$ B. $D/(\lambda d)$ C. dD/λ D. $\lambda d/D$

5. If slit separation doubles in Young's experiment, fringe width becomes:

- A. Half B. Four times C. Unchanged D. Twice

6. If screen distance doubles, fringe width becomes:

- A. Unchanged B. Four times C. Half D. Twice

7. For $\lambda=600$ nm, $D=2$ m and $d=0.6$ mm, fringe width is:

- A. 2 mm B. 1 mm C. 0.2 mm D. 20 mm

8. Constructive interference occurs for path difference:

- A. Any path difference B. $(n+1/2)\lambda$
C. $n\lambda$ D. $\lambda/4$ only

9. Destructive interference occurs for path difference:

- A. $n\lambda$ B. $(n+1/2)\lambda$ C. $2n\lambda$ D. 0

10. Two equal coherent waves each of intensity I interfere in phase. Maximum intensity is:

- A. 0 B. I C. $4I$ D. $2I$

11. At the central bright fringe of ideal Young's experiment, path difference is:

- A. Zero B. $\lambda/4$ C. $3\lambda/2$ D. $\lambda/2$

12. If the whole Young apparatus is immersed in water of index n , fringe width becomes:

- A. $n^2\beta$ B. β/n C. $n\beta$ D. Unchanged

13. Single-slit diffraction is significant when slit width is:

- A. Comparable to wavelength
B. Infinite
C. Zero only
D. Always much greater than wavelength

14. The central diffraction maximum becomes wider when slit width:

- A. Tends to infinity B. Decreases
C. Doubles D. Increases

15. The central bright band in single-slit diffraction is approximately:

- A. Twice as wide as the adjacent bright band
B. Four times as wide
C. Half as wide
D. Equal in width

ANSWER KEY — check after completing all 15 questions

1.B 2.C 3.A 4.A 5.A 6.D 7.A 8.C 9.B 10.C 11.A 12.B 13.A 14.B 15.A

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper