

PART 1 - PHYSICS

Topic : Wave optics

SECTION-B : (Maximum Marks : 8)

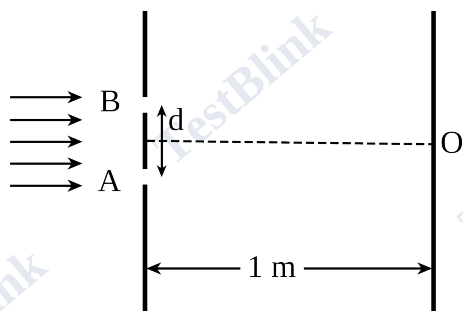
- This section contains **ONE** paragraph.
- Based on each paragraph, there are **TWO** questions.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value of the answer (in decimal notation, truncated / rounded-off to the **SECOND DECIMAL PLACE**; e.g. 6.25, 7.00, -0.33, -.30, 30.27, -127.30) in the place designated to enter the answer.
- Answer to each question will be evaluated according to the following marking scheme :

Full Marks : +4 If ONLY the correct answer is entered;

Zero Marks : 0 In all other cases.

Paragraph for Questions 1 and 2

In a Young's double slit experiment, each of the two slits A and B, as shown in the figure, are oscillating about their fixed center and with a mean separation of 0.8 mm. The distance between the slits at time t is given by $d = (0.8 + 0.04\sin \omega t)$ mm, where $\omega = 0.08 \text{ rad s}^{-1}$. The distance of the screen from the slits is 1 m and the wavelength of the light used to illuminate the slits is $6000 \text{ \AA}$. The interference pattern on the screen changes with time, while the central bright fringe (zeroth fringe) remains fixed at point O.



1. The 8th bright fringe above the point O oscillates with time between two extreme positions. The separation between these two extreme positions, in micrometer (μm), is _____.

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Scan or tap for the
full solution

2. The maximum speed in $\mu\text{m/s}$ at which the 8th bright fringe will move is _____.

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Space for Rough Work

**JEE ADVANCED WAVE OPTICS — YOUNG'S DOUBLE SLIT
EXPERIMENT (FRINGE WIDTH, INTENSITY) — PYQS**

Test Pattern : JEE (Advanced)

ANSWER KEY**SECTION-B**

Ques.	1	2							
Ans.	600.00 to 602.00	24.00 to 24.15							