A+ Coaching Point, DMR

- Strive for excellence

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1. Discuss the formation of standing waves in an open organ pipe and the different modes of vibration.
2. Explain the formation of standing waves in a closed organ pipe and the different modes of vibration.
3. Show that the path followed by a body projected at an angle 'θ' with the horizontal is parabolic. Derive an expression for time of flight, maximum height and horizontal range.
4. Show that the magnitude of resultant of two vectors $\vec{P}$ and $\vec{Q}$ acting at an angle θ with each other is $R=\sqrt{P^2+Q^2+2PQ\cos\theta}$. Find the direction of the resultant of R. What is the condition for minimum and maximum resultant?
5. State and prove Bernoulli's theorem.
6. Deduce an expression to show that pressure does not depend on the area of cross section or the shape of the vessel. Explain the phenomenon of the hydraulic lift.
7. State and prove Newton's law of cooling.
8. What is a simple pendulum? Show that the time period of a simple pendulum does not depend upon the mass of the bob.
9. Derive Newton's formula for the velocity of sound in air. What corrections did Laplace apply to it?
10. Obtain the expression for rectangular resolution of vector $\vec{A}$ into two components.
11. What is meant by plane progressive wave? Prove that in a plane progressive wave, harmonic waves traveling along positive x-axis is $Y=r\sin\frac{2\pi}{\lambda}(vt-x)$, where the symbols have their usual meanings.
12. Derive an expression for excess pressure inside a liquid drop and a bubble.
13. Discuss the formation of beats.
14. State triangle law of vector addition. Give its analytical treatment to find the magnitude and direction of a resultant vector. When is the resultant of two vectors (i) maximum and (ii) minimum?

"Dream is not that which you see while sleeping it is something that does not let you sleep." –– **A.P.J. Abdul Kalam**, **Wings of Fire: An Autobiography**.

ALL THE BEST A+'IANS….. ☺

Er. RENJI THOMAS

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