

National Experimental Skill Test - 2014

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IAPT

Instructions

General

- Test Duration: 3 hr (2:00PM to 5:00PM)
- Semi-interactive. Feel Comfortable.

Dos

- Check Answer Sheet (5 Pages, 19 Demos), Student Details
- Submit Answer Sheet Before Leaving
- Mobiles Must be Switched off or in Silent Mode
- Raise hand if you need any help

Don't

- Discussion/talk not permitted

Demo 1. Lightning the Lamp



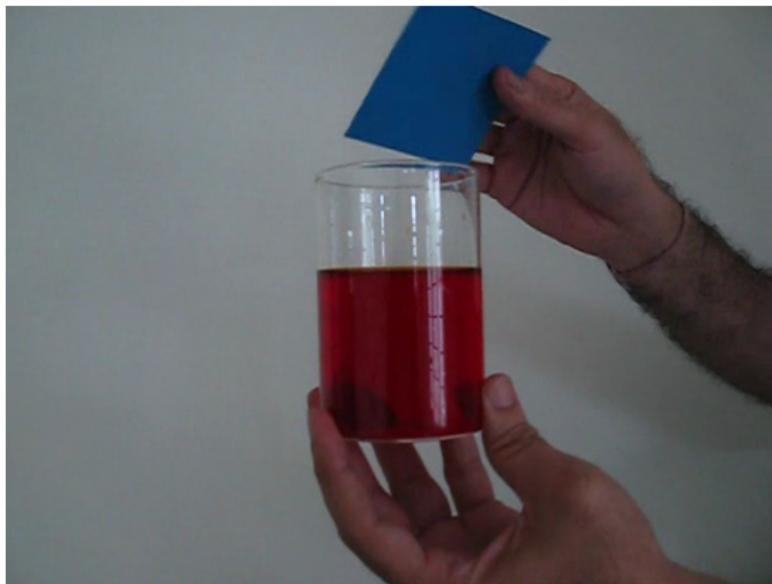
Why does smoke goes up in one of the chimney but goes down in another?

Demo 2. Interesting Bulbs



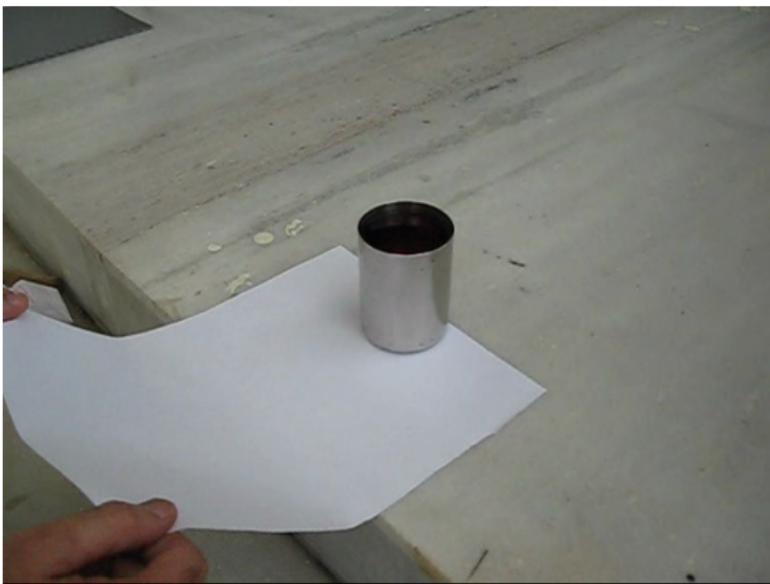
- (a) Explain why intensity of two bulbs is reversed when connection is changed?
- (b) Why bulb at centre stopped glowing when two bulbs are interchanged?

Demo 3. Tumbler and the Water



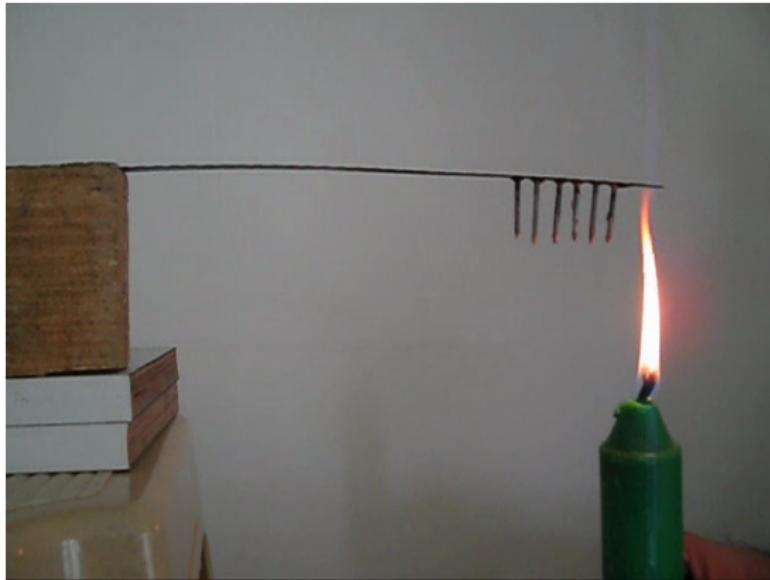
Explain why water does not fall when tumbler is inverted?

Demo 4. Tumbler and the Paper



Explain why tumbler does not move with paper in first case but starts moving with it in second case?

Demo 5. Hacksaw Blade



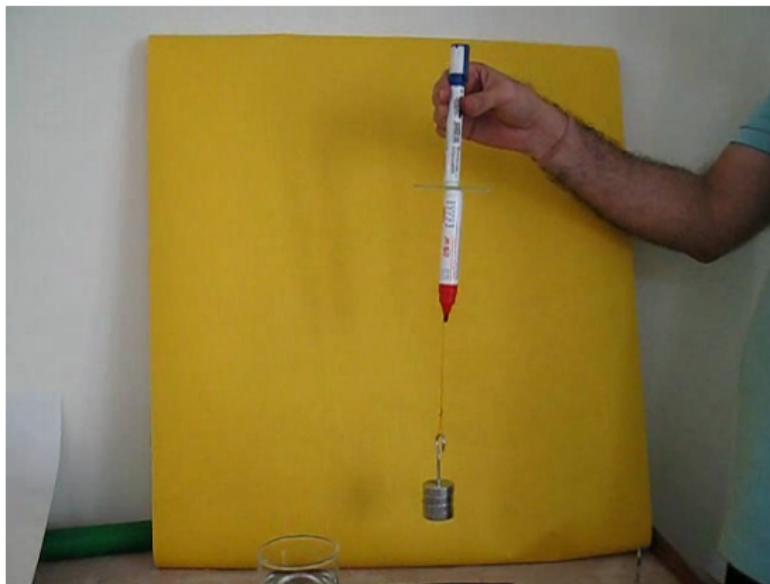
- (a) Why does nail start falling down?
- (b) Why time interval between successive falling of nail increases as we go away from the candle?

Demo 6. Rotating Straw



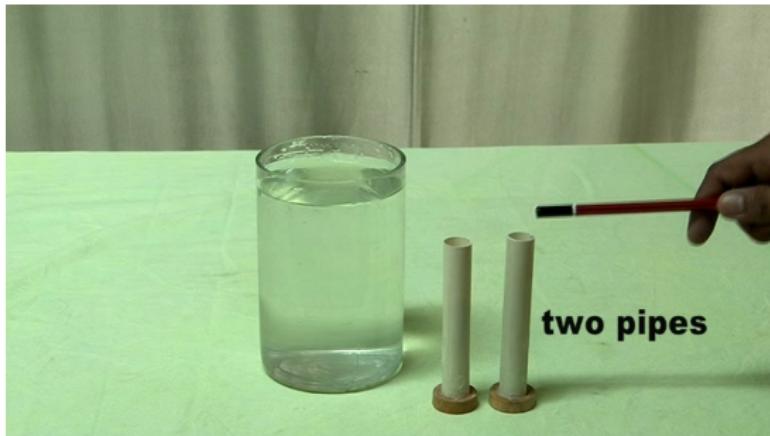
Explain why straw starts rotating when we bring second straw near to it?

Demo 7. Sticking Slides



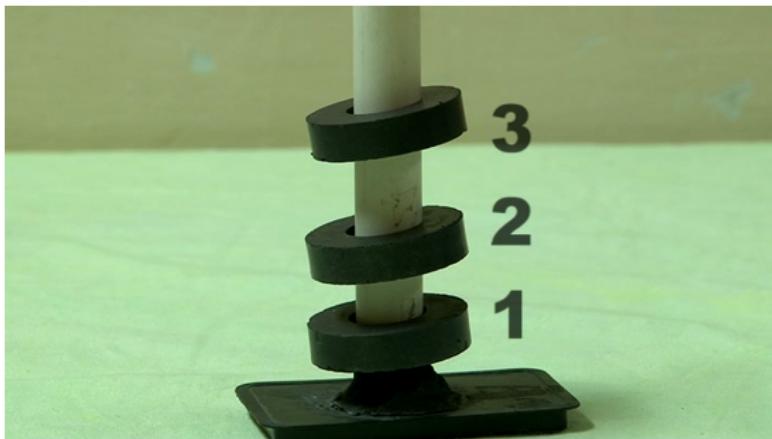
Why a drop of water makes the slides stick together?

Demo 8. Two Pipes



- (a) Guess the difference in the constructions of the pipes?
- (b) With this difference why one floats vertically but the other falls on the surface?

Demo 9. Three Magnets



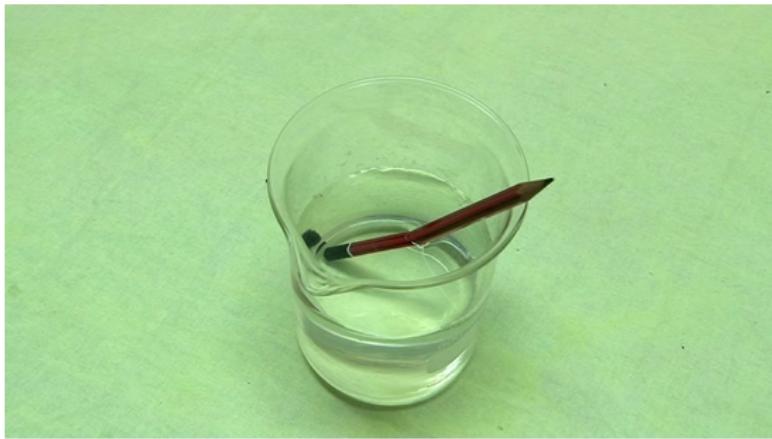
- (a) Which of the pairs of magnets repel each other and which attract each other?
- (b) What is the resultant force on magnet 2 and magnet 3?
- (c) Why the separation between magnet 2 and 3 is more than the separation between magnet 1 and 2?

Demo 10. Eureka!



- (a) Find the mass of the beaker + water?
- (b) Find the mass of the hanging object in gram?
- (c) What is the reading on the dial of the pan balance at this time?

Demo 11. Bending of Pencil



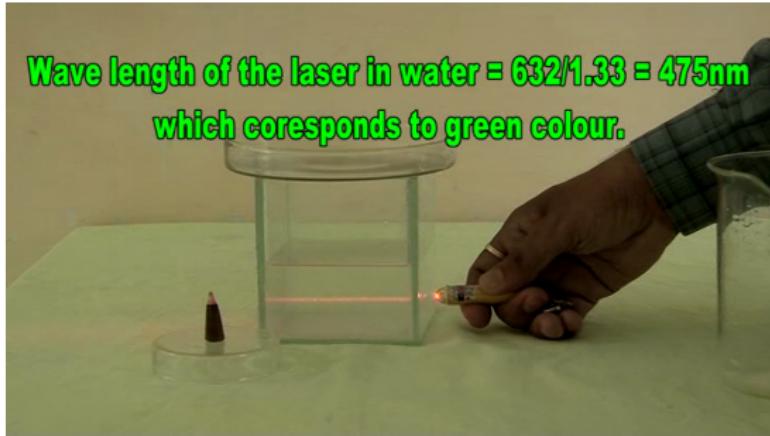
- (a) Why does the pencil look bend?
- (b) Drawing rays, explain why the pencil appears more sharply bent when viewed at an angle?

Demo 12. Action-Reaction



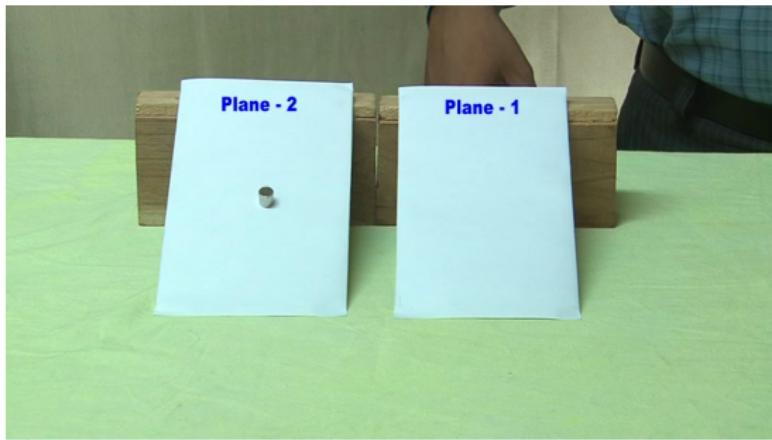
- (a) What is the mass of stand?
- (b) What is the mass of magnet 1? Of magnet 2?
- (c) What reading do you expect at the end?

Demo 13. Laser in Air and Water



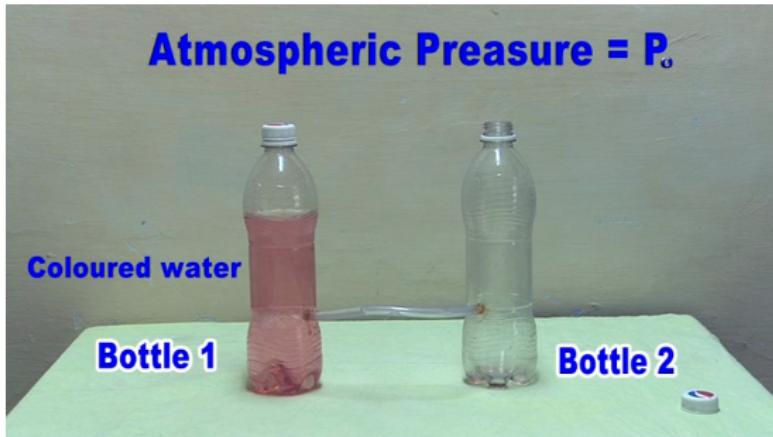
- (a) Why was smoke put in the vessel to begin with?
- (b) Why does laser look red when its wavelength in water is 475nm?

Demo 14. Magnet Sliding on Inclined Plane



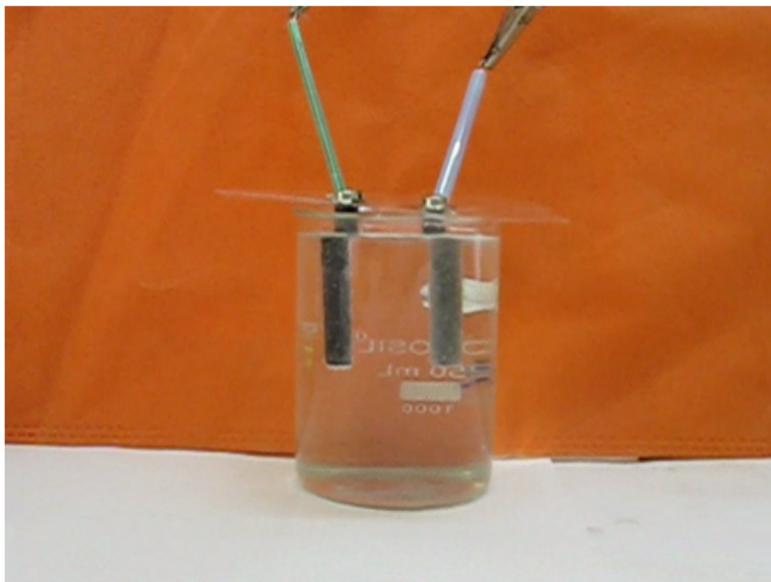
- (a) How much time the magnet has taken to slip down the plane 1? Of plane 2?
- (b) What are the materials used in inclined plane 1 and plane 2?
- (c) Explain why magnet moves differently on two planes?

Demo 15. Two Bottles



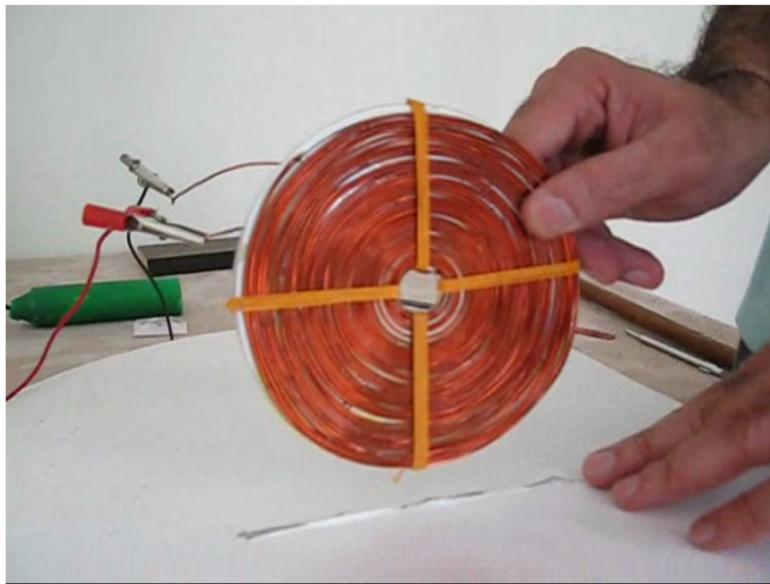
- (a) Pressure of air in bottle 1 is (i) $< P_0$ (ii) $> P_0$ (iii) $= P_0$?
- (b) Pressure of air in bottle 2 is (i) $< P_0$ (ii) $> P_0$ (iii) $= P_0$?
- (c) If the cap of the bottle 1 is opened, what kind of water flow do you expect?
 - (i) No water will flow
 - (ii) Some water will flow from bottle 1 to 2
 - (iii) Water will be equally divided in both bottles

Demo 16. Electrolysis of Salt Solution



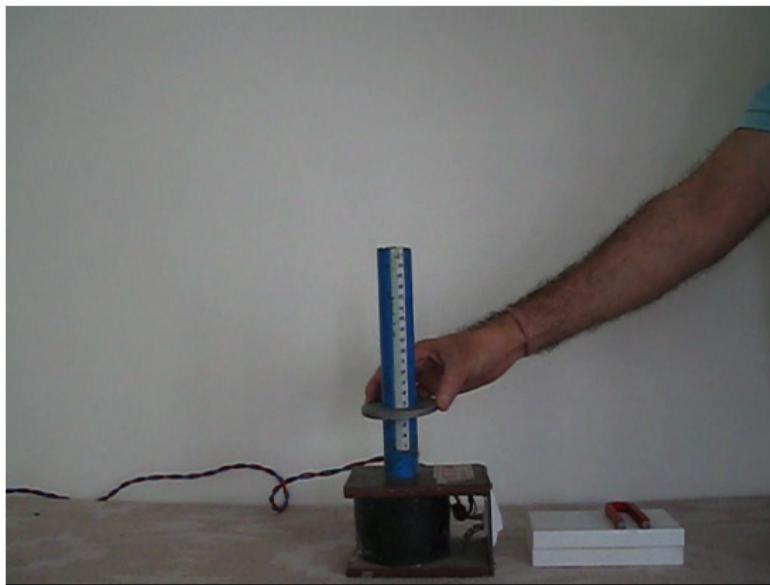
- (a) Why salt (table salt) was added in water?
- (b) Why gases produced at one of the electrode is more?

Demo 17. Magnetic Line of Forces



Draw the magnetic line of forces of the spiral coil?

Demo 18. Jumping of the Aluminum Ring



Explain why the aluminium ring jumps when switch is pressed?