

Experiments contest PF 7 QUIZ

1. If we blow through a long tube with at the end a whistle we can hear a sound of a certain frequency.

*What will happen with the frequency if we blow butane gas through the tube?
(Propagation speed of sound in butane is lower than in air)*

- A. We get the same frequency
- B. The frequency gets lower
- C. The frequency gets higher

Answer: B

Explanation: $v = \lambda \cdot f$ If v is lower than f is also lower

2. A Styrofoam ball is put on a precision scale under the bell jar of a vacuum pump. We can read its mass.

What will happen with the reading of the mass on the scale after the bell jar is pumped vacuum?

- A. Nothing will happen
- B. The scale will indicate an increased number for the mass
- C. The scale will indicate a decreased number for the mass.

Answer: B

Explanation: If there is no more air around the styrofoam ball there is no more upward buoyancy Archimedes force on the ball. So the scale will “indicate” an increased number for the mass.

The real mass of course stays unchanged.

3. Cut a beetroot in half. Carve a hole in both halves. Put both halves in a dish with 0.5 cm of water. Add salt to one of the halves. Compare both halves after an hour.

What do you see?

- A. Nothing happened
- B. In the half beetroot with salt in it, water is visible
- C. In the half without salt in it, water is visible.

Answer: B

Explanation: The concentration in salt is higher in the hole than in the beetroot cells. Because of the osmotic pressure, the liquid flows through the cell membrane from the place where concentration is the lowest to the place where it is the highest.

4. The Mayas used red rose petals to color agave fibre. They obtained a reddish purple.

What did they use to colour this fibre blue?

- A. They used copper sulfate.
- B. They added vinegar.
- C. They added chalk.

Answer: C

Explanation: The juice of the red rose's petals is a color indicator. It turns rose in acid (vinegar) and blue in a basic medium

5. The white powder used in diapers and also by magicians can absorb a lot of water.

How do you get the liquid back out?

- A. You add cooking salt.
- B. You add talcum powder.
- C. You add vinegar.

Answer: A

Explanation: The superabsorbent act on aqueous solutions by solvation of polyacrylates groups fixed on the macromolecular chains. These being negatively charged, repel leading to their maximum extension, which allows absorbing more and more water. When adding salt (NaCl) in the gel, the salt dissolves and the ions Na^+ and Cl^- tend to be surrounded by water molecules. There is competition between the interactions polymer/water and water/ion Na^+ and Cl^- . Considering the amount of salt added, we get a fluid.

6. When you use a purple-blue laser on a green leaf, what do you see?

- A. a purple-blue spot of light.
- B. a green spot.
- C. a red spot.

Answer: C

Explanation: Because of the fluorescence. The chlorophyll in the green leaves absorbs the energy of the purple-blue light and emits a part of the energy in red light.

Name:...

School: ...

Answers: 1. **B**

2. **B**

3. **B**

4. **C**

5. **A**

6. **C**

/ 6

RESULTS: On a total of 100 participants

6/6	5/6	4/6	3/6	2/6	1/6	0/6
8	19	31	19	17	6	0

Amount of right answers per question

1	2	3	4	5	6
66	49	82	66	74	47