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RAJASTHAN ADMINISTRATIVE SERVICES COMBINED COMPETITIVE EXAM

REVISED STUDY MATERIALS

GENERAL KNOWLEDGE AND GENERAL STUDIES

PAPER - II



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EVERYDAY SCIENCE

Science is all around us, and it is a part of our everyday lives. While we often do not realize it, we see things like chemical processes happening every day. Many wonder how some of these happen and why some things in our world are the way they are. Here we will look at 50+ of the most common questions asked about the science that surrounds us.

- **Why Do I Cry When I Chop Onions?**

This is all due to what is called syn-propanethial-S-oxide. This is a chemical irritant that will stimulate the lacrimal glands in your eyes, and when this happens, tears are released. In a nutshell, cutting an onion releases an irritating chemical into the air, and this irritates your eyes.

- **Why Is the Winter Cold and the Summer Hot?**

This will actually seem a bit backward. The earth is closest to the sun in January and farthest away in July. The temperatures have everything to do with the angle of the sun's rays. The sun's rays are hitting the earth steeply in summer, meaning they are focused on one spot more, causing more heat. The opposite happens in winter and the rays are more spread out, resulting in less heat.

- **What Is That Noise When I Crack My Joint?**

Believe it or not, it is not the bones at all. When you move your joint, the tendons associated with that joint will move out of place slightly and change position. As the tendon goes back into its initial position, a snapping sound can occur. A cracking sound can occur as you move

your joints and the ligaments tighten.

- **Why Do My Toes and Fingers Wrinkle in Water?**

Many people wonder why the toes and fingers wrinkle, but not other parts of the body. This is because of the stratum corneum (outer layer of skin) being thickest on the pads of the fingers and toes. This is a layer of skin with dead keratin cells. When we spend a lot of time in water, these cells will start to absorb it and then swell up. This layer is attached tightly to living tissue. Wrinkles form due to compensating for increased surface area.

- **How Do Aerosol Cans Work?**

You have probably used some type of aerosol can at some point and wondered how it works. The basic premise of an aerosol can is that there is one fluid that is stored under high pressure. This fluid is used to push a second fluid out of the can.

- **How Do Mirrors Work?**

We can thank physics for reflection and mirrors. When we look in the mirror, we see a light-print of ourselves, not a reflection. Mirrors work because they are capable of scattering light in a way known as specular reflection.

- **How Do Kaleidoscopes Work?**

They work similar to mirrors, but in this case reflection is involved. Basic kaleidoscopes have two mirrors and a wedge that is 30 degrees. Depending on how you hold it, the wedge will

be at a different position. Then, the light hits a mirror in the device and the intricate geometrical shapes and colors come to life. This is a very basic explanation, as kaleidoscopes are actually pretty complicated.

● **How Do Bladeless Fans Work?**

We have recently started to see fans with no visible blades, such as the one created by Dyson. Now, the fan actually does have blades, but they are just not in a place that is visible. They are within the fan's pedestal. With this type of fan, air is pulled into the pedestal, flows up a tube, and then makes its way out at the front of the fan.

● **How Do Thermometers Detect Temperature?**

Thermometers do not actually measure temperature itself. These devices have some sort of physical property, such as mercury, and how the temperature affects this is measured and this is what causes the temperature reading.

● **What Happens to Body Fat When You Lose Weight?**

In a nutshell, it breaks down. As you are burning more calories than you take in, the fat in your body will be used for energy. In turn, the fat cells in your body will shrink. Other complex metabolic processes also occur, such as the body breaking down triglycerides, but if you are just curious about fat cells, this is the very basic explanation of what occurs.

● **A man with a load jumps from a high building. What will be the load experienced by him?**

Zero, because while falling, both the man and the load are falling at the same acceleration i.e. acceleration due to gravity.

● **A piece of chalk when immersed in water emits bubbles. Why?**

Chalk consists of pores forming capillaries. When it is immersed in water, the water begins to rise in the capillaries and air present there is expelled in the form of bubbles.

● **Why does a liquid remain hot or cold for a long time inside a thermos flask?**

The presence of air, a poor conductor of heat, between the double glass wall of a thermos flask, keeps the liquid hot or cold inside a flask for a long time.

● **Why does a ball bounce upon falling?**

When a ball falls, it is temporarily deformed. Because of elasticity, the ball tends to regain its original shape for which it presses the ground and bounces up (Newton's Third Law of Motion).

● **Why is standing in boats or double decker buses not allowed, particularly in the upper deck of buses?**

On tilting the centre of gravity of the boat or bus is lowered and it is likely to overturn.

● **Why is it recommended to add salt to water while boiling dal?**

By addition of salt, the boiling point of water gets raised which helps in cooking the dal sooner.

● **Why is it the boiling point of sea water more than that of pure water?**

Sea water contains salt, and other impurities which cause an elevation in its boiling point.

● **Why is it easier to spray water to which soap is added?**

Addition of soap decreases the surface tension of water. The energy for spraying is directly proportional to surface tension.

● **Which is more elastic, rubber or steel?**

Steel is more elastic for the same stress pro-