

G. Tech & Energy

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In today's world, technology and energy are two things that go hand in hand. Technology helps us use energy more efficiently and find new sources of clean and renewable energy. Let's explore how technology and energy work together to power our lives.

What is Energy?

Energy is the ability to do work. Everything around us, from the lights in our homes to the cars we drive, relies on energy. There are different types of energy, such as electrical energy, mechanical energy, and thermal energy.

How Do We Use Energy?

We use energy in many ways in our daily lives. When we turn on a light switch, we use electrical energy to light up the room. When we ride a bike, we convert our own energy into mechanical energy to move the bike. Even when we cook food on a stove, we use thermal energy to heat up the pan.

Fossil Fuels

For a long time, we relied on fossil fuels like coal, oil, and natural gas to produce energy. These fossil fuels were formed from the remains of plants and animals that lived millions of years ago. However, burning fossil fuels releases harmful gases into the atmosphere, contributing to air pollution and climate change.

Clean and Renewable Energy

Today, we are turning to cleaner and renewable sources of energy to power our world. Clean energy sources include solar energy, wind energy, and hydropower. These sources of energy do not produce harmful emissions and can be replenished naturally.

Solar Energy

Solar energy comes from the Sun. We use solar panels to capture sunlight and convert it into electricity. Solar panels can be installed on rooftops or in large solar farms to generate power for homes and buildings.

Wind Energy

Wind energy is harnessed from the power of the wind. Wind turbines have large blades that spin when the wind blows, generating electricity. Wind farms with multiple turbines can produce a significant amount of energy.

Hydropower

Hydropower comes from the energy of flowing water. Dams are built to store water in reservoirs, and when the water is released, it flows through turbines to produce electricity.

The Role of Technology

Technology plays a crucial role in harnessing and using energy efficiently. Advanced technologies help us improve the efficiency of solar panels, wind turbines, and other renewable energy systems. They also allow us to store energy so that we can use it even when the Sun isn't shining or the wind isn't blowing.

Smart Grids

One example of energy technology is the smart grid. The smart grid is an advanced electrical grid that uses sensors, computers, and communication technology to monitor and manage the flow of electricity. It helps balance supply and demand, making our energy system more reliable and efficient.

Energy Conservation

Technology also helps us conserve energy. Energy-efficient appliances, LED light bulbs, and smart thermostats are just some examples of how technology helps us use less energy without sacrificing comfort and convenience.

1. What is energy?
 - A) The ability to do work.
 - B) The movement of cars and bikes.
 - C) The result of burning fossil fuels.
 - D) The temperature of a heated pan.
2. How do we convert our own energy into mechanical energy when riding a bike?
 - A) By turning on a light switch.
 - B) By capturing sunlight with solar panels.
 - C) By burning fossil fuels.
 - D) By pedaling and moving the bike.
3. What are some examples of clean and renewable energy sources?
 - A) Coal and oil.
 - B) Solar energy and wind energy.
 - C) Natural gas and hydropower.
 - D) Fossil fuels and thermal energy.
4. How do wind turbines generate electricity?
 - A) By capturing sunlight.
 - B) By converting thermal energy.
 - C) By using the power of the wind to spin blades.
 - D) By burning fossil fuels.
5. What is the purpose of a dam in hydropower generation?
 - A) To store wind energy.
 - B) To capture sunlight.
 - C) To produce thermal energy.
 - D) To store water and control its flow.
6. What role does technology play in using energy efficiently?

- A) Technology doesn't affect energy efficiency.
 - B) Technology helps us waste more energy.
 - C) Technology helps improve the efficiency of energy systems.
 - D) Technology only works with fossil fuels.
7. What is the purpose of a smart grid in the context of energy?
- A) It monitors traffic flow.
 - B) It controls water flow in dams.
 - C) It balances the supply and demand of electricity.
 - D) It manages wind turbines.
8. What is the advantage of using LED light bulbs for energy conservation?
- A) They emit harmful emissions.
 - B) They consume more energy.
 - C) They provide dim lighting.
 - D) They use less energy compared to traditional bulbs.
9. What is the source of solar energy?
- A) Wind turbines.
 - B) Fossil fuels.
 - C) The Sun.
 - D) Natural gas.
10. Why are cleaner and renewable energy sources preferred over fossil fuels?
- A) Fossil fuels are more affordable.
 - B) Cleaner energy sources are less reliable.
 - C) Fossil fuels release harmful gases and contribute to pollution.
 - D) Renewable energy sources require more technology.

ANSWERS & EXPLANATIONS

1. A) The ability to do work.
 - a. Energy is defined as the ability to do work or cause a change. It powers various processes and activities in our daily lives.
2. D) By pedaling and moving the bike.
 - a. When we ride a bike, the energy from our own muscles is converted into mechanical energy that moves the bike forward.
3. B) Solar energy and wind energy.
 - a. Solar energy and wind energy are examples of clean and renewable energy sources that do not produce harmful emissions and can be replenished naturally.
4. C) By using the power of the wind to spin blades.
 - a. Wind turbines generate electricity by using the kinetic energy of the wind to spin their blades, which in turn generates electrical energy.
5. D) To store water and control its flow.
 - a. Dams are built in hydropower systems to store water in reservoirs. The controlled release of water through turbines generates electricity.
6. C) Technology helps improve the efficiency of energy systems.
 - a. Advanced technologies improve the efficiency of renewable energy systems like solar panels and wind turbines, making them more effective in harnessing energy.
7. C) It balances the supply and demand of electricity.
 - a. A smart grid uses technology to monitor and manage the flow of electricity, helping balance supply and demand in the energy system.
8. D) They use less energy compared to traditional bulbs.
 - a. LED light bulbs are energy-efficient because they use less electricity to produce the same amount of light as traditional incandescent bulbs.
9. C) The Sun.
 - a. Solar energy is derived from the Sun's radiation, which is captured by solar panels and converted into electricity.
10. C) Fossil fuels release harmful gases and contribute to pollution.
 - a. Fossil fuels release harmful emissions into the atmosphere, contributing to air pollution and climate change. Cleaner and renewable energy sources have a lower environmental impact.