

Sources of Energy: Exercise Questions

Q.1 A solar water heater cannot be used to get hot water on

- (a) A sunny day
- (b) A cloudy day
- (c) A hot day
- (d) A windy day

Sol. (b) A cloudy day

Q.2 Which of the following is not an example of a bio-mass energy source?

- (a) Wood
- (b) Gobar-gas
- (c) Nuclear energy
- (d) Coal

Sol. (c) Nuclear energy

Q.3 Most of the sources of energy we use represent stored solar energy. Which of the following is not ultimately derived from the Sun's energy?

- (a) Geothermal energy
- (b) Wind energy
- (c) Nuclear energy
- (d) Bio-mass

Sol. (c) Nuclear Energy

Q.4 Compare and contrast fossil fuels and the Sun as direct sources of energy.

Sol. Sun is the direct source of energy, while fossil fuels are obtained from the earth's crust and solar energy stored in them. When green plants prepare food from the sun light, they convert the solar energy into chemical energy which is stored in the form of biomass. The same biomass energy gets transferred to the animals. In this way, the biomass energy which is stored in fossil fuels has come from the sun.

Q.5 Compare and contrast bio-mass and hydroelectricity as sources of energy.

Sol. Biomass and hydroelectricity are different form of energy. Hydroelectricity is produced by using the kinetic energy from moving water, on the other hand, the energy from biomass is produced by decomposition of animals and plants wastes. Since biomass is consist of organic compounds. So, when we get energy by combustion of biomass, they create air pollution. While in production of hydroelectricity, there is no pollution.

Q.6 What are the limitations of extracting energy from:

- (a) Wind
- (b) Waves
- (c) Tides

Sol. The limitations of extracting energy from:

(a) **Wind:** Requirement of land for establishment of wind farms is very large. Wind farms can be established only at those places where wind speed is minimum 15 km/hr. This is not always so. Initial cost of establishing and maintenance for a wind farm is very high.

(b) **Waves:** Energy from waves can be harnessed only at selected places where sea-waves are very strong.

(c) Tides: Energy from tides can be obtained only at selected places. In every coastal areas, the rise and fall of sea-water during tides is not enough to produce electricity on a large scale.

Q.7 On what basis would you classify energy sources as:

(a) Renewable and non-renewable

(b) Exhaustible and inexhaustible

Are the options given in (a) and (b) are the same?

Sol. The given options (a) and (b) are almost same.

Renewable sources: The sources of energy which replenish on their own and are easily available in nature and are inexhaustible, are called renewable sources of energy. This energy is obtained from flowing water, wind, tides, ocean waves, or wood.

Non-renewable sources: These sources are produced over millions of years in the earth's crust under high temperature and high pressure. Once these sources are consumed, these are not replaceable for a very long time. They are limited in nature. Fossil fuels like coal, petroleum and natural gas are non-renewable and exhaustible sources.

Q.8 What are the qualities of an ideal source of energy?

Sol. The qualities of an ideal source of energy are:

- (i) It should be able to produce large amount of heat or energy for each unit of mass or volume.
- (ii) It should be easily available and accessible.
- (iii) It should be easily transported everywhere.
- (iv) It should be economical cheap.

Q.9 What are the advantages and disadvantages of using a solar cooker? Are there places where solar cookers would have limited utility?

Sol. The advantages of Solar Cooker:

- (i) Use of solar is environment friendly because it does not produce any smoke during cooking.
- (ii) Use of a solar cooker does not involve any cost of fuel like-coal, kerosene and LPG.

The disadvantages of Solar Cooker:

- (i) Solar cooker works very slowly.
- (ii) It works only during summer months and is useless during winters and on rainy season.

The places where receive rain mostly or where the sky remains cloudy, the solar cookers have limited utility.

Q.10 What are the environmental consequences of increasing demand for energy? What steps would you suggest to reduce energy consumption?

Sol. The environmental consequences of increasing demand for energy are:

- (i) The use of fossil fuels like coal, wood etc. is increasing air pollution.
- (ii) The combustion of fossil fuels increases the amount of greenhouse gas like carbon-dioxide in the atmosphere. Which leads to global warming. It also affect the weather pattern around the world.
- (iii) Excessive use of fossil fuels create a situation when there would be not fossil fuel.
- (iv) For production of high energy by nuclear power plants, increase the radioactivity in the atmosphere.

Steps to reduce energy consumption:

- (i) Limited use of energy is the only way.
- (ii) Use public transport like-bus or trains instead of private vehicle.
- (iii) Use bicycle for short distances.
- (iv) Walk for very short distance commute.
- (v) Switch off the electric devices like lights, fans, TV. Etc. when not in use, to save electricity.