

**NCERT X CLASS PHYSICS**  
**Chapter-5 - Source of energy**

**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)

**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)

**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)

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

**Sol.** (i) The reserves of fossil fuels are limited, i.e., exhaustible whereas solar energy is available in abundance (and that too without cost), i.e., is inexhaustible.  
(ii) Fossil fuels cause pollution on burning whereas solar energy is pollution free.  
(iii) Fossil fuels can provide energy at any required time whereas solar energy becomes unavailable when the sky is covered with clouds.

**Q.5** Compare and contrast bio-mass and hydro electricity as sources of energy.

**Sol.** (i) Bio-mass is a renewable source of energy only if we plant trees in a planned manner which is not the case with hydroelectricity.  
(ii) The energy from bio-mass can be obtained by using a chulhas or a gobar gas plant whereas hydroelectricity requires construction of dams on rivers.  
(iii) Bio-mass provides pollution-free energy only when converted into biogas whereas hydroelectricity is totally pollution-free.

**Q.6** What are the limitations of extracting energy from – (a) the wind? (b) waves? (c) tides

**Sol.** (a) (i) Not available at all time and at all places.    (ii) Needs large open field.  
(b) (i) Affected by wind movement.      (ii) Not available at all places.  
(c) (i) Depends on the phase of moon.      (ii) Conversion efficiency is less

**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) the same?

**Sol.** We would classify energy sources as (a) renewable and non-renewable.

**Renewable sources** of energy are **inexhaustible** whereas **non-renewable** sources of energy are **exhaustible**. Thus, the options in (a) and (b) are the same.

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

- Sol.** (i) An ideal fuel is that which gives us more heat per unit mass.  
(ii) An ideal fuel is that which does not pollute air on burning by giving out smoke or harmful gases.  
(iii) It should be cheap and easily available.  
(iv) It should be easy to handle, safe to transport.

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

**Sol.** Solar cookers have limited utility at places which remain cloudy or have longer winter duration, e.g. hilly areas.

**Advantages of use of solar cooker**

- (i) It cooks food without causing any kind of pollution.  
(ii) It is economical to use solar cooker because nothing is to be paid for using solar energy.  
(iii) It is easy to handle solar cooker and there is no chance of any kind of accident.  
(iv) The nutrients of food do not get destroyed.

**Disadvantages of use of Solar Cooker**

- (i) Solar cooker cannot be used at night and in cloudy weather.  
(ii) It takes more time to cook food.  
(iii) The direction of solar cooker is to be changed continuously towards the direction of sun.  
(iv) Sun energy is not available uniformly all the time and at all the places.  
(v) It cannot be used for making chapaties and for frying.

**Q.10** What are the environmental consequences of the increasing demand for energy?

What steps would you suggest to reduce energy consumption?

- Sol.** (i) Burning of fossil fuels to meet increasing demand for energy causes **air-pollution**.  
(ii) Construction of dams on rivers to generate hydroelectricity **destroys large ecosystems** which get submerged under water in the dams. Further, large amounts of methane (which is a greenhouse gas) is produced when submerged vegetation rots under anaerobic conditions.

**In order to reduce energy consumption:**

- (i) Fossil fuels should be used with care and caution to derive maximum benefit out of them.  
(ii) Fuel saving devices such as pressure cookers etc. should be used.  
(iii) Efficiency of energy sources should be maintained by getting them regularly serviced.  
(iv) And last of all, we should be economical in our energy consumption **as energy saved is energy produced**.