

Sources of Energy

126 If energy can neither be created nor destroyed, explain with an example as to why we should worry about our energy resources.

2014/2015/2016 [3 Marks]

Energy can neither be created nor destroyed, the total energy during a physical or chemical process is conserved. Still we worry about our energy resources because energy in usable form is being dissipated to the surroundings in less usable form. Hence, the sources of energy we use to do work are consumed and cannot be used again.

For example, when a candle burns, chemical energy in the wax is converted to heat and light energy on burning along with other products. However, this process cannot be reversed to get back the chemical energy in the form of wax.

127. State any four characteristics of a good source of energy.

2011/2012/2013/ 2014/2015/2016 [2 Marks]

A good or ideal source of energy should be:

- (i) Eligible to produce more heat per unit mass
 - (ii) Pollution free (or smoke free)
 - (iii) Economical
 - (iv) Easily available
 - (v) Easy to handle
 - (vi) Safe to transport (*any four*)
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128. Write the characteristic features of the micro-organisms which help in the production in a bio gas plant.

2014/2015/2016 [1 Mark]

The micro-organisms are anaerobic bacteria, which breakdown organic matters anaerobically and produce biogas.

129. State the reason for calling fossil fuels as non-renewable source of energy.

2014/2015/2016 [1 Mark]

It is because fossil fuels take millions of years to be formed and there is only a limited reserve of it.

130. The chief constituent of biogas is methane. List any two other constituents of biogas.

2013/2014/2015/2016 [1 Mark]

- (i) Hydrogen (H_2), (ii) Hydrogen sulphide (H_2S).
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131. Name the kind of energy possessed by wind and the device used to harness it.

2013/2014/2015/2016 [1 Mark]

Wind possesses kinetic energy which can be harnessed by windmills.

14. Blowing wind carries kinetic energy. Mention the two factors that cause winds to blow.

2013/2014/2015/2016 [1 Mark]

Unequal heating of the landmass and water bodies by solar radiation generates air movement and causes winds to blow.

132. What is biomass?

2010/2012/ 2014/2015 [3 Marks]

- ⇒ Dead remains of plants, animals, and agricultural wastes are known as biomass.
- ⇒ Raw materials used for making biogas are biomass.
- ⇒ (i) Biogas is used as a fuel
(ii) It is also used to generate electricity.

133. Differentiate between energy obtained by burning fossil fuels and that obtained as solar energy.

2014/2015 [3 Marks]

<i>Fossil fuels</i>	<i>Solar energy</i>
(i) It is a conventional source energy. (ii) Fossil fuels can be used as source of energy at anytime. (ii) Use of fossil fuel causes air pollution because during burning of fossil fuel, harmful gases are evolved.	(i) It is a non-conventional source of energy. (ii) Solar energy can be used only in day time. (iii) Solar energy is a clean fuel and can be harnessed without causing any pollution.

134. What is a wind energy farm? Mention the steps involved in generating electricity from such farms.

2014/2016 [3 Marks]

- ⇒ A wind energy farm consists of a number of windmills erected over a large area such that energy output of each mill in the farm is coupled together.
- ⇒ To generate electricity, the rotary motion of the windmill is used to turn the turbine of the electric generator. The energy output of each windmill in a farm is coupled together to get electricity on a commercial scale.

135. Name two fossil fuels. Explain how burning of fossil fuels affects our water and soil resources.

2013/ 2014/2015/2016 [1 Mark]

- ⇒ (i) Coal, (ii) Petroleum
- ⇒ (a) Burning of fossil fuels releases gases like CO₂, SO₂, NO₂, etc., which mix with water on raining and cause acid rains.
(b) These cause air pollution. With rain, these pollutants fall as acid rain and cause soil pollution.

136. Name any one material used to make a solar cell and also mention the range of voltage produced by a typical cell.

2014/2015/2016 [1 Mark]

- ⇒ Silicon
- ⇒ 0.5 – 1 V

137. What are hot spots inside earth's crust?

2014/2015/2016 [1 Mark]

Molten rocks formed in the deeper hot regions of earth's crust are pushed upward and trapped in certain regions. These are called hot spots.

138. Write the special techniques used for mounting solar cells panels. Mention its advantages.

2013/ 2014/2015/2016 [1 Mark]

The solar cell panels are mounted on specially designed inclined roof so that more solar energy is incident over it.

139. List any three limitations of using a solar cooker.

2014/2015/2016 [3 Marks]

⇒ Advantages of using solar cooker:

- (i) Here, energy is obtained free of cost.
- (ii) It does not cause any pollution.
- (iii) Nutritive value of food is retained in it.

Disadvantages of solar cooker:

- (i) It cannot be used at night.
- (ii) It cannot be used in a cloudy day.
- (iii) Direction of sunlight is necessary to be adjusted frequently.

⇒ Yes, there are some places where solar cookers have limited utility. At poles, where Sun is absent for half of the year, the solar cooker has limited utility. In the hilly areas where the Sun shines for limited time periods and where inclined Sun rays reaches, the use of solar cooker is difficult.

140. List in tabular form two distinguishing features between renewable and non-renewable sources of energy. Give two examples of each.

2013/2014/2015/2016 [3 Marks]

<i>Renewable sources</i>	<i>Non-renewable sources</i>
(i) Can be replenished.	(i) Cannot be replenished.
(ii) Available in abundance. No conservation needed.	(ii) Need to be conserved as there are limited reserves.
Examples: Solar energy, wind energy, ocean thermal energy, geothermal energy. (any two)	Examples: Wood, fossil fuel like coal, petroleum, natural gas. (any two)
