L14-Energy Conservation

Keywords

Electricity	Renewable	Compressed natural gas (CNG)
Power cuts	Non-renewable	Fossil fuels
Fuels	Industrialisation	Geothermal energy
Timber	Automation	Windmills
ISI mark	Felling of trees	

In-text Questions

In-text Questions 14.1

1. Tick mark the sources of energy from the list given below:

   i. Petrol ✓

   ii. LPG ✓

   iii. Turpentine oil

   iv. Kerosene oil ✓

   v. Engine oil

   vi. Pond water

   vii. Tap water

   viii. River water ✓

   ix. Sunlight ✓

   x. Charcoal ✓

2. State whether the following statements are true or false and correct the false statements:

   i. Electricity can be produced with the help of pond water.False

Because: Electricity can be produced only from **River water** when it falls down from a height.

ii. Wind is caused due to change in air pressure. False

Because: Winds are caused due to change in air temperature.

iii. Geothermal energy was initially solar energy. True

iv. Wood, coal and oil are natural fuels. True

v. Electricity can only be produced from water, steam, coal and oil. False

Because: Electricity can also be produced from Sun, Wind, Nuclear substances etc.

In-text Questions 14.2

1. From the list given below, separate the renewable sources of energy from non-renewable sources by marking R and NR respectively.

i. Sunlight R

ii. Petroleum NR

iii. Steam NR

iv. Charcoal NR

v. Water R

vi. Diesel NR

vii Wood NR

viii Kerosene NR

ix Nuclear fuel NR

x Electricity NR

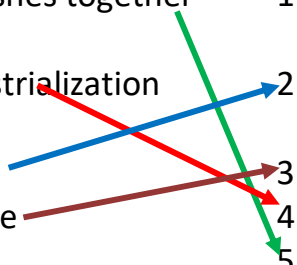
xi LPG NR

xii Wind R

In-text Questions 14.3

1. Match column A with column B

Column A	Column B
i. Cooking two dishes together leads to	1. Renewable
ii. Increased industrialization results in	2. Energy generated
iii. Energy saved is	3. Limited
iv. Natural fuels are	4. Increased demand for energy
	5. Conservation of energy
	6. Population explosion



i -5

ii – 4

iii -2

iv – 3

2. List four factors which contribute in creating a gap between the demand and supply of energy today.

   Answer: The four factors which contribute in creating a gap between the demand and supply of energy today are:

   i. increasing population

   ii. industrialisation,

   iii. traffic on roads

   iv. automation in home,office and farms

In-text Questions 14.4

1. Fill in the blanks:

   i. Tube lights are more energy-efficient than bulbs.

   ii. Electronic chokes consume one third energy as compared to traditional chokes.

   iii. Light coloured walls help in reducing the lighting requirement of a room.

   iv. More power is consumed by over-sized refrigerators.

   v. Energy saving is guaranteed by using products bearing the ISI mark.

2. State whether the following statements are true or false and correct the false statements:

   i. Wood stoves are very heat efficient. False

   Because: Wood stoves dissipate more heat. Gas stoves are better.

   ii. Cookers which work on solar energy save a lot of fuel. True

   iii. Sandwich bottom pans take a long time to heat. False

   Because: Sandwich bottom pans heat up fast.

   iv. Small burners are suitable for small vessels. True

   v. Food should be eaten as soon as it is cooked to avoid reheating. True

   vi. Driving in the correct gear increases work efficiency by 50%. True

   vii. Wear and tear of engines depends upon the state of the air filter. True

   viii. Computers should not be switched off during the day. False

   Because: Computers should be switched off when not in use.

   ix. Wastage of energy in the office does not affect you personally. False

Because: It affects the overall costs of company and thus may impact our personal salary as well as the environment in general.

x. Street lights need light sensitive switches. True

In-text Questions 14.5

1. List at least four advantages of using non-conventional sources of energy.

   Answer: The advantages of using non-conventional sources of energy are:

   i. There is a never-ending supply.

   ii. These are easily available.

   iii. Production and use of non-conventional energy is always pollution free and leaves the environment clean.

   iv. These are locally produced. Hence there is low cost of distribution.

   v. Energy production units can be started on a small scale. Hence, heavy investment is not required.

   vi. Job opportunities for the local people are opened up.

2. Name the chief constituent of biogas.

   Answer: Biogas is a product of fermentation of animal manure in the absence of air. It chiefly consists of **methane gas** which can safely be used as a fuel for cooking, as well as lighting.

3. List two uses of biogas.

   Answer: The two uses of biogas are:

   i. It keeps the environment around the house clean since all animal manure is fed into the biogas plant.

   ii. It prevents eye and lung diseases caused due to smoke from firewood.

4. Name the device used to transform daylight to electrical energy.

   Answer: The device used to transform daylight to electrical energy is called solar cell.

   These solar cells produce electricity according to the amount of sunlight falling on them. When chemical storage batteries are used along with these

   cells, the excess energy produced on sunny days is stored for use on cloudy days.

In-text Questions 14.6

1. What is the difference between a big hydro-electric project and micro hydel project?

   Answer: Difference between a big hydro-electric project and micro hydel project:

A big hydro-electric project	Micro hydel project
Needs more investment	Can be set up with less budget
Difficult to maintain	Easy to maintain
Big flowing rivers required	Small water supplies falling from great heights is enough
No scope to setup more of these as all big rivers have already been used for this purpose	These can be set up even in remote areas where there is even little water which can fall from great height

2. List five benefits of setting up a micro hydel project.

   Answer: The five benefits of setting up a micro hydel project are:

   i. They do not require heavy investment on installation.

   ii. They are comparatively easy to maintain.

iii. They can be set up to supply electricity locally to remote areas .

iv. Local supply of electricity reduces cost of distribution.

v. Decentralization of power production and supply eases pressure on the larger power projects.

3. State the advantages of using non-conventional sources of energy.

Answer: The advantages of using non-conventional sources of energy are:

i. There is a never-ending supply.

ii. These are easily available.

iii. Production and use of non-conventional energy is always pollution free and leaves the environment clean.

iv. These are locally produced. Hence there is low cost of distribution.

v. Energy production units can be started on a small scale. Hence, heavy investment is not required.

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Terminal Questions

1. Explain with examples what you understand by the term ‘energy’.

Answer: The capacity for doing work is called Energy.

Use of energy always brings about some change:

- A fan rotates due to electrical energy.
- The milk boils due to heat energy.
- All plants and animals on Earth are alive because of solar energy.

2. Give two examples each of renewable and non-renewable sources of energy in your locality.

   Answer: The two examples of renewable and non-renewable sources of energy in my locality are:

   - Renewable sources – Solar panels and wind mills
   - Non-renewable sources – Petrol and Liquid Petroleum Gas (LPG)

3. List five suggestions you would give a housewife to conserve energy in her home.

   Answer: The five suggestions to a housewife to conserve energy in her home would be:

   i. Switch off lights and fan while leaving a room.

   ii. Use light colours for walls. This helps reduce lighting requirements by p to 40%.

   iii. Use a refrigerator of the size your family needs.

   iv. Use your washing machine at proper loads.

   v. Avoid non-ISI appliances

Previous Year Questions

1. Why copper-bottom pans are considered good for cooking? 1

   Answer: The copper bottom or sandwich bottom pans are more heat sensitive, and thus save energy and cook fast.

2. What are the advantages of using nonconventional sources of energy? 6

   Answer: The advantages of using non-conventional sources of energy are:

   i. There is a never-ending supply.

ii. These are easily available.

iii. Production and use of non-conventional energy is always pollution free and leaves the environment clean.

iv. These are locally produced. Hence there is low cost of distribution.

v. Energy production units can be started on a small scale. Hence, heavy investment is not required.

vi. Job opportunities for the local people are opened up.

3. Food can be cooked in a solar cooker using solar energy. Describe a box-type solar cooker. 2

Answer: **Solar cooker -** This is a shallow, square box with black sides and bottom and a glass top.

- When the black bottom is hit by sunlight passing through the glass top, it gets heated up.
- When food is kept inside the box, it gets cooked by this heat.

4. Give eight suggestions to a homemaker to reduce her electricity bills. **[4]**

Answer: The eight suggestions to a homemaker to reduce her electricity bills are:

i. Switch off lights and fan while leaving a room.

ii. Change over to *energy efficient tube lights* from power consuming bulbs.

iii. Use light colours for walls. This helps reduce lighting requirements by p to 40%.

iv. Use a refrigerator of the size your family needs.

v. Defrost your fridge regularly.

vi. Use your washing machine at proper loads.

vii. Avoid non-ISI appliances.

viii. Use your oven, hair dryer and vacuum cleaner sparingly to save on power.

5. Mention any four advantages of using non-conventional sources of energy. 2

Answer: The *four* advantages of using non-conventional sources of energy are:

i. There is a never-ending supply.

ii. These are easily available.

iii. Production and use of non-conventional energy is always pollution free and leaves the environment clean.

iv. These are locally produced. Hence there is low cost of distribution.

6. Suggest eight ways by which you could save energy (electricity) at your work place. **4**

Answer: The eightways to save energy at work place would be:

i. Ask the cleaning staff not to switch on all lights and fans before people come to the office.

ii. Switch off fans and lights when you leave the room.

iii. Minimise the use of air-conditioners.

iv. Switch off computers when not in use.

v. Avoid unnecessary photocopying of documents.

vi. Encourage people to use the stairs instead of the lift, specially in places like hospitals.

vii. Keep charging and discharging cycles of equipment proper.

viii. Buy standard marks equipment for office.

7. Enumerate **three** ways by which solar energy can be used in homes. **6**

Answer: The three ways in which solar energy can be used in homes are:

i. Use of solar cooker

ii. Use of solar lighting

iii. Use of solar heating

Sl No.	Use	Description
i.	Solar cooker	This is a shallow, square box with black sides and bottom and a glass top. When the black bottom is hit by sunlight passing through the glass top, it gets heated up. When food is kept inside the box, it gets cooked by this heat. The advantages of using a solar cooker are: • Fuel cost is reduced. • It is totally safe to use. • It is very easy to use. • It can cook up to four dishes at a time.
ii.	Solar lighting	Ordinary daylight is transformed to electrical energy with the help of solar cells. Solar cells can be used to produce lighting in home.
iii.	Solar heating	Solar heating can be used to: • Heat water for bathing purposes in home, hotels and hostels. • Provide central heating in homes, hotels

		and hostels.