

Answers

- Q** What does the term 'non-renewable energy' mean? Give two examples.

A Energy from fuel sources that cannot be easily replaced. Examples include coal, oil, natural gas or nuclear power.
- Q** Give two ways of generating electricity where no fuel is 'burnt' and the energy source is renewable.

A Could be from: wind, sun (solar), water (wave, tidal, hydro electric dams) or geothermal.
- Q** What does the term 'biofuel' mean? Give two examples.

A Fuel made from plant or animal matter. Examples: crops, trees and rotting waste.
- Q** Give two negatives of relying on fossil fuels.

A Fossil fuels are finite and supplies are running out. They cause polluting emissions e.g. carbon dioxide that increase greenhouse gases in the atmosphere and add to climate change.
- Q** What does the term 'pollution' mean?

A The release of harmful substances into the atmosphere, water or on land.
- Q** Why don't nuclear power stations add to 'climate change'?

A They do not produce greenhouse gases.
- Q** What does the term 'Greenhouse Effect' mean?

A The effect in which greenhouse gases in the atmosphere trap heat from the Sun, causing the Earth's temperature to rise.
- Q** What is the 'Kyoto Protocol'?

A A worldwide agreement that sets out targets for reducing greenhouse gas emissions.
- Q** How was crude oil formed?

A Crude oil is fossil fuel formed when vast amounts of microscopic sea creatures died millions of years ago. Layers of silt covered and gradually compressed and heated them. Without oxygen they did not rot, but slowly changed into the oil we extract and use today.
- Q** What is fractional distillation?

A Separation of liquid into parts (fractions) that have different boiling points and chemical composition. Fractional distillation is used to split crude oil into different, more useful substances (fractions) in an oil refinery.
- Q** Describe what nuclear fusion is.

A Nuclear fusion is when the nuclei of hydrogen fuse or join together and releases energy. It needs to be compressed by very high temperatures such as at the Sun's core.

Answers continued

- 12. Q** What does the process nuclear fission mean?
A Nuclear fission is the splitting of nuclei of uranium 235 to release energy. Other neutrons are also produced and these may go on to split other nuclei, thus becoming a chain reaction.
- 13. Q** What does the term 'renewable energy' mean? Give two examples.
A Energy from sources that are able to be renewed or used again without ever running out. Examples include: water, solar, wind or geothermal power, hydrogen or biofuel.
- 14. Q** Give two reasons for the massive increase in demand for energy over the last 100 years.
A There has been a huge increase in population over the last century - needing more food, clothing, heat for homes and goods, plus our increased need for mobility - all items requiring energy.
- 15. Q** Give an example of a natural occurrence that increases carbon dioxide in the atmosphere.
A Volcanic eruptions.
- 16. Q** Give three examples of human activity that have major effects on our climate.
A Deforestation, increased animal farming and rice production, increased need for mobility meaning more vehicles, more need for electricity.
- 17. Q** Describe the impact that climate change is having.
A Climate change is evident in the increases of extreme weather conditions around the world; storms or hurricanes, rises in sea levels in some areas, flooding (inland as well as coastal) in some places extreme droughts and water shortages.
- 18. Q** Name three greenhouse gases.
A Carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (NO_x).
- 19. Q** What does the term 'clean energy' mean?
A The term used to describe sources of energy that do not give off any greenhouse gases or other pollutants.
- 20. Q** Give two examples of how geothermal energy can be harnessed.
A Geothermal energy can be harnessed either directly through hot springs or by pumping water deep below the surface to be heated by hot rocks, turning water to steam, which then in turn drives turbines to generate electricity.
- 21. Q** Describe a wind turbine.
A A wind turbine consists of rotor blades (made of strong fibreglass and wood) rotating round a central hub which contains a gearbox and generator. Sensors monitor wind direction and turn the tower head to face the wind. Power output varies according to the amount and strength of the wind.
- 22. Q** What is a collection of wind turbines called?
A Wind farm.

Answers continued

- 23. Q** Approximately how many wind turbines are there in the UK?
A There are over 2,000 wind turbines in the UK.
- 24. Q** Name two ways energy can be harnessed using the Sun.
A Solar cells, known as photovoltaic cells, or using mirrors to concentrate rays of sunlight, or using direct heat from the Sun to heat water.
- 25. Q** What does 'photovoltaic' mean?
A 'Photovoltaic' means the direct conversion of sunlight into electricity using semi-conducting materials that become electrically conductive in light and heat.
- 26. Q** Give three examples of how water can provide energy.
A Running water from rivers or dams, the energy from waves at sea, tidal energy harnessed by building tidal barrages can power turbines.
- 27. Q** Who first identified hydrogen as an element and when?
A Henry Cavendish identified hydrogen as an element in 1766.
- 28. Q** Name two compounds or substances that contain hydrogen.
A There are various correct answers, for example water and living organisms.
- 29. Q** At what temperature does hydrogen become liquid?
A Hydrogen becomes a liquid at -253°C .
- 30. Q** Give two reasons why many people in the western developed world are obese?
A People eat more than they need for energy, particularly highly processed and/or unhealthy food, and do not get enough physical exercise.
- 31. Q** Give three examples of why we generate too much waste.
A We generate too much waste by producing more than we need, using too much packaging that is then deposited instead of being recycled or reused.
- 32. Q** How can we use less water? Give two examples.
A Take showers instead of baths or do not leave taps running or dripping.
- 33. Q** How can we use less electricity in our homes? Give two examples.
A Turn lights or electrical items off when not in use, turn down thermostats or insulate our homes properly.
- 34. Q** Give examples of how we can 'reduce, reuse, recycle'.
A Reduce the amount we consume, both food and energy; reuse as much as possible by repairing or recharging; recycle as much as possible, for example glass, aluminium cans, paper.

Answers continued

35. Q What is sustainable development?

A The term used to describe a way of doing something that meets the needs of people today without compromising the ability of future generations to meet their own needs.

36. Q Give two examples of how our homes could be made more energy efficient.

A Adequate insulation, double or triple glazing, water efficient washing machines and dishwashers, dual flush toilets.

37. Q What two forms of transport have no negative impact on the environment?

A Walking and cycling.

38. Q Give two ways in which a driver of a car can reduce energy wastage.

A Don't drive too fast or brake heavily. Have cars regularly serviced and keep tyres correctly inflated.

39. Q What is the chemical symbol for hydrogen?

A The chemical symbol for hydrogen is H.

40. Q What is the chemical symbol for oxygen?

A The chemical symbol for oxygen is O.

41. Q What is a hybrid car?

A Hybrid cars combine normal petrol engines with electrical engines powered by batteries.

42. Q When hydrogen is burnt in air, what is given out?

A Water vapour.

43. Q Name the three main sources of renewable energy used in Iceland.

A Geothermal power, hydroelectricity and hydrogen.