Answer Key 14.1

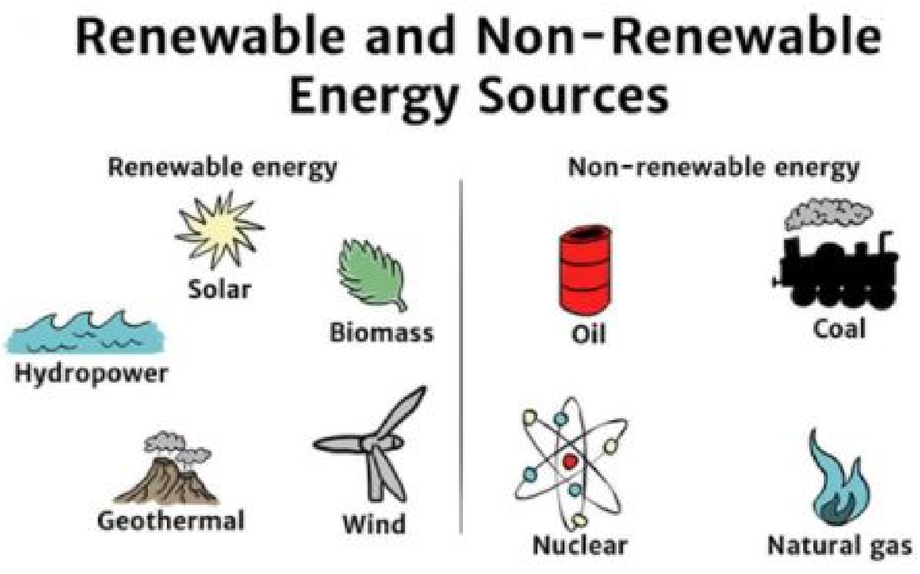
Marks - 25

Case study based questions

10th Science

Sources Of Energy

Passage - 1 **5 Marks**



Those sources of energy which have accumulated in nature over a very, very long time and cannot be quickly replaced when exhausted are called non-renewable sources of energy. For example, coal is a non renewable source of energy because coal has accumulated in the earth over a very, very long time, and if all the coal gets exhausted, it cannot be produced quickly in nature (see above figure). The non-renewable sources of energy are : Fossil fuels (Coal, Petroleum and Natural gas), and Nuclear fuels (such as Uranium). Non-renewable sources of energy are dug out from the earth.

Q1. (2) Non-renewable

Q2. (1) Solar energy

Q3. (2) Uranium

Q4. (1) Non-renewable

Answer Key 14.1

Marks - 25

Q5. (2) Slowly replacable

Passage - 2 **5 Marks**

Those sources of energy which are being produced continuously in nature and are inexhaustible, are called renewable sources of energy. The renewable sources of energy are also called non-conventional sources of energy. These sources of energy can be used again and again, endlessly. They will never get exhausted. Since renewable sources of energy will never get exhausted, so they are also known as inexhaustible sources of energy. A yet another name for renewable sources of energy is the alternative sources of energy. Examples : Hydroenergy; Wind energy; Solar energy; Tidal energy, Geothermal energy ; Biomass energy.

Q1. (2) Renewable

Q2. (2) Non-conventional

Q3. (1) Non-conventional

Q4. (2) Renewable

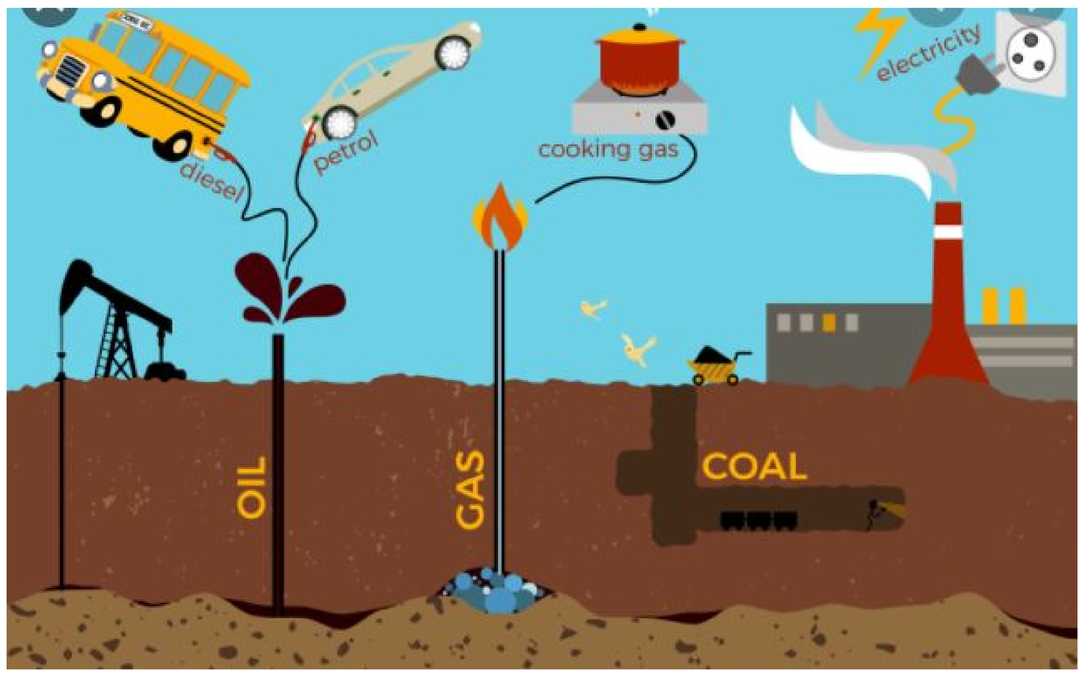
Q5. (3) Nuclear energy

Answer Key 14.1

Marks - 25

Passage - 3

5 Marks



The materials which are burnt to produce heat energy are known as fuels. Examples of fuels are : Wood, Coal, Cooking gas (LPG), Kerosene, Diesel and Petrol (see above figure). In our day to day life, the most important sources of energy are fuels. The usefulness of a fuel is measured in terms of its calorific value. Higher the calorific value, better the fuel will be. The amount of heat produced by burning a unit mass of the fuel completely is known as its calorific value. The unit of mass usually taken for measuring the calorific value of a fuel is “gram”.

Q1. (3) Fuels

Q2. (1) Fuels

Q3. (4) All of the above

Q4. (3) Calorific value

Q5. (3) Gram

Passage - 4

5 Marks

Answer Key 14.1

Marks - 25

Since joule is a very small unit of heat energy, so the calorific value is usually expressed as kilojoules per gram (kJ/g). hydrogen gas has the highest calorific value of 150 kilojoules per gram. Thus, because of its high calorific value, hydrogen is an extremely good fuel. Most of the common fuels are the compounds of hydrogen and carbon called 'hydrocarbons'. LPG has a higher percentage of hydrogen than coal, so LPG has a higher calorific value than coal.

Q1. (3) KJ/gm

Q2. (3) Hydrogen gas

Q3. (1) 150 KJ/g

Q4. (1) Hydrocarbons

Q5. (2) LPG

Passage - 5

5 Marks

Answer Key 14.1

Marks - 25

The fuel which we choose for our domestic or industrial use should have a high calorific value. Carbon dioxide and water vapour are the harmless products produced by the burning of fuels. But some fuels produce poisonous gases like carbon monoxide (CO) and sulphur dioxide (SO_2), etc., which pollute the air around us. The fuel should have a proper ignition temperature which should be well above the normal room temperature.

Q1. (1) High

Q2. (2) Carbon dioxide

Q3. (3) Carbon monoxide and sulphur dioxide

Q4. (2) Above

Q5. (4) (CO) and (SO_2) respectively

Answer Key 14.2

Marks - 25

Q4. (1) TRUE

Q5. (2) FALSE

Passage - 2 **5 Marks**

Coal is a fuel which leaves behind a lot of ash after burning. The fuel should burn smoothly and at a steady rate. This is because if a fuel burns too fast, then most of the heat produced by it will be wasted. And if the fuel burns too slowly, then the heat produced may not serve our purpose. The fuels should have a low rate of evaporation at room temperature.

Q1. (1) Coal

Q2. (1) smoothly, steady

Q3. (2) Wasted

Q4. (3) not serve our purpose

Q5. (1) Low

Answer Key 14.2

Marks - 25

Passage - 3

5 Marks

While choosing the most appropriate fuel for our domestic use or for use in industry, we should keep in mind the following characteristics of an ideal fuel or good fuel.

1. It should have a high calorific value.
2. It should burn without giving out any smoke or harmful gases.
3. It should have a proper ignition temperature.
4. It should be cheap and easily available.

Q1. (1) High

Q2. (4) All of the above

Q3. (4) All of the above

Q4. (3) Moderate (neither too high, nor too low)

Answer Key 14.2

Marks - 25

Q5. (3) Both A and B

Passage - 4 **5 Marks**

The traditional sources of energy which are familiar to most people are called conventional sources of energy. The main conventional sources of energy are wood and fossil fuels (like coal, petroleum and natural gas). The fuels derived from wood, coal and petroleum such as charcoal, coke, coal gas, petrol, diesel, kerosene, fuel oil and liquefied petroleum gas (LPG) are also known as conventional sources of energy (or conventional fuels). Even dung cakes (uple) is a conventional source of energy in our country.

Q1. (1) Conventional

Answer Key 14.2

Marks - 25

Q2. (1) Wood and fossil fuels

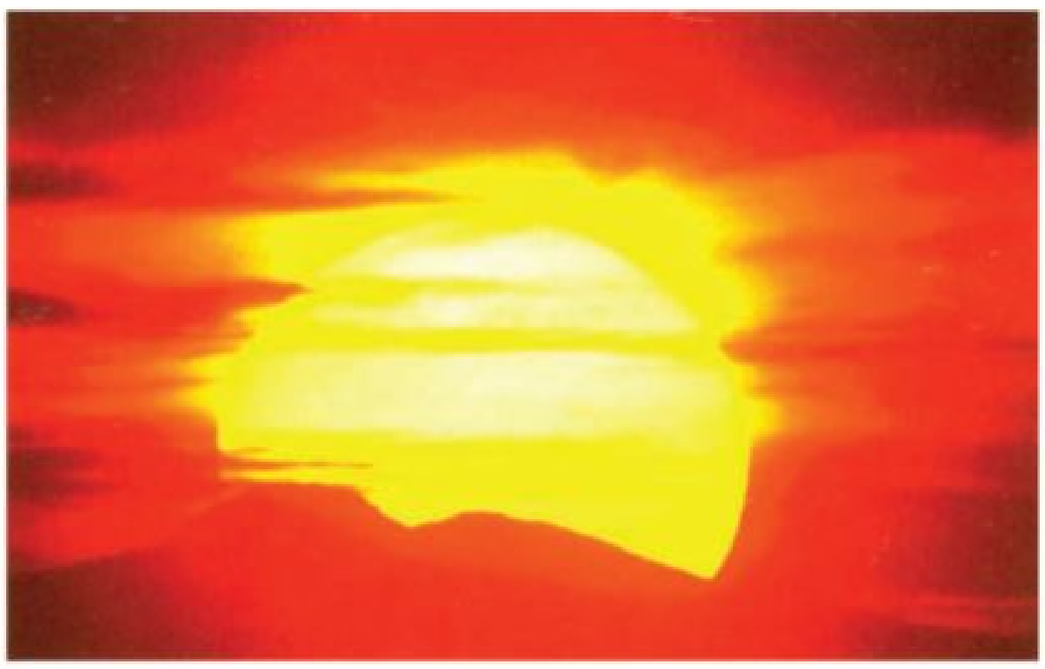
Q3. (4) All of the above

Q4. (3) Liquefied Petroleum Gas

Q5. (1) Conventional

Passage - 5

5 Marks



Sun is the ultimate source of fossil fuels. It was the sunlight of long ago that made plants grow, which were then converted into fossil fuels. Fossil fuels are energy-rich compounds of carbon which were originally made by the plants with the help of sun's energy (solar energy). Today when we burn coal, petroleum or natural gas, we are actually making use of the sunlight energy that was stored by the plants millions of years ago.

Q1. (2) Sun

Q2. (1) Carbon

Q3. (3) Solar

Answer Key 14.2

Marks - 25

Q4. (1) Fossil fuels

Q5. (1) Millions
