

## Heat and Energy

**1. What is Heat?**

Ans. Heat is the internal energy of molecules constituting the body. It flows from a hot body to a cold body.

**2. What are the units of Heat? And how the SI unit of heat is related to the unit calories?**

Ans. SI unit of Heat: **Joule (J)**

CGS Unit of Heat: **erg**

**$1 \text{ J} = 10^7 \text{ erg}$**

- The relation between Joule and Calories is  
 **$1 \text{ Cal} = 4.816 \text{ Joule}$**

**3. What is Temperature?**

Ans. Temperature is a quantity which tells the thermal state of a body (i.e., the degree of hotness or coldness of the body). It determines the direction of flow of heat when two bodies at different temperatures are placed in contact.

**4. On which factors the amount of heat energy contained by a body depends.**

Ans. The amount of heat energy contained by a body depends on its mass, temperature and the nature of material of the body.

**5. "Two bodies at different temperatures are placed in contact." What happen?**

Ans. When the two bodies of different temperature come in contact, then the heat flows from hot body to cold body till then when the temperature of both the bodies become same. When the temperature become equal the heat flow will stop. This is called Thermal Equilibrium.

**6. What are the units of temperature?**

Ans. SI unit of temperature: **Kelvin (K)**

CGS unit of temperature:  **$^{\circ}\text{C}$**

- The relation between Kelvin and  $^{\circ}\text{C}$  is  
 **$T \text{ K} = 273 + t \text{ }^{\circ}\text{C}$**

**7. What is the relation between Celsius and Kelvin Scale?**

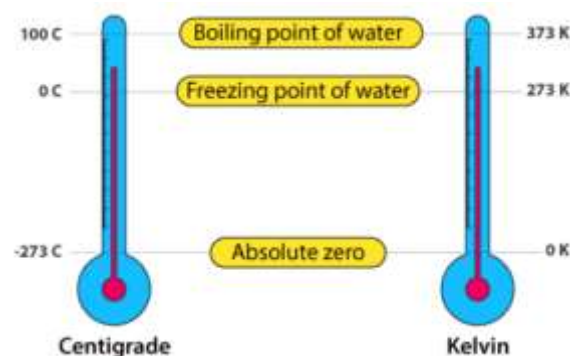
Ans. We know the freezing point of water is  $0^{\circ}\text{C}$  or 273 K

And the boiling point of water is  $100^{\circ}\text{C}$  or 373 K

Thus, there are 100 equal division between Ice point and Boiling point both Celsius and Kelvin Scale.

So, the temperature in Kelvin Scale  
 $= 273 + \text{Temperature in Celsius Scale.}$

Or,  **$K = C + 273$**



### 8. What is Absolute Zero Temperature?

Ans. The Zero of the Kelvin Scale is called Absolute Zero and it is at a temperature when molecular motion ceases.

i.e  $0\text{ K} = -273^{\circ}\text{C}$

### 9. What is the relation between Centigrade Scale and Fahrenheit Scale?

Ans. We know the freezing point of water is  $0^{\circ}\text{C}$  or  $32^{\circ}\text{F}$

And the boiling point of water is  $100^{\circ}\text{C}$  or  $212^{\circ}\text{F}$

So, the 100 equal division of Celsius Scale = 180 equal division of Fahrenheit Scale.

or,  $1^{\circ}$  on Celsius Scale =  $\frac{180}{100}$  on Fahrenheit Scale

So the length of each part in Celsius Scale is  $1/100$  and the length of each part of Fahrenheit scale is  $1/180$ .

or,  $1^{\circ}$  on Celsius Scale =  $\frac{9}{5}$  on Fahrenheit Scale

Now the thermal expansion of mercury in Celsius Scale from freezing point of water ( $0^{\circ}\text{C}$ ) to  $C^{\circ}\text{C}$  is

$$\frac{C-0}{100} \text{ or } \frac{C}{100} \dots\dots\dots \text{(I)}$$

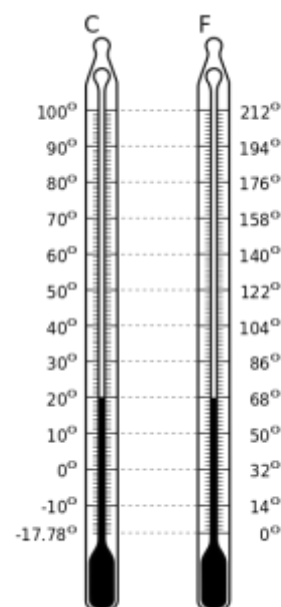
Now the thermal expansion of mercury in Fahrenheit Scale from freezing point of water ( $32^{\circ}\text{F}$ ) to  $F^{\circ}$  is

$$\frac{F-32}{180} \dots\dots\dots \text{(II)}$$

So from the equation (I) and equation (II) we get-

$$\frac{C}{100} = \frac{F-32}{180}$$

$$\text{Or, } \frac{C}{5} = \frac{F-32}{9}$$



### 10. What is Thermal Expansion?

Ans. The expansion of a substance on heating is called the thermal expansion of that substance.

- The increase in length is called **linear expansion**
- The increase in area is called **superficial expansion**.
- The increase in volume is called **cubical expansion**

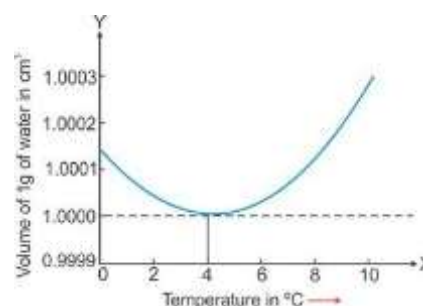
### 11. What is Anomalous Expansion of Water?

Ans. The expansion of water when it is cooled from  $4^{\circ}\text{C}$  to  $0^{\circ}\text{C}$  is known as Anomalous expansion of water.

### 12. State the volume changes that you will observe when a given mass of water is

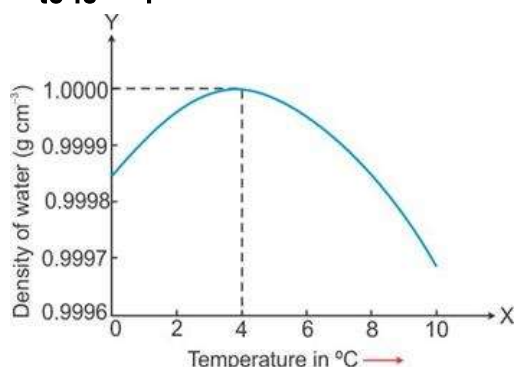
heated from  $0^{\circ}\text{C}$  to  $10^{\circ}\text{C}$ . Sketch a temperature-volume graph to show the behavior.

Ans. When a given mass of water is heated from  $0^{\circ}\text{C}$  to  $4^{\circ}\text{C}$ , it contracts, i.e. its volume decreases on heating it from  $0^{\circ}\text{C}$  to  $4^{\circ}\text{C}$ , i.e. its volume increases and then increase on further heating it from  $4^{\circ}\text{C}$  to  $10^{\circ}\text{C}$ .



13. Draw a graph to show the variation in density of water with temperature in the range from  $0^{\circ}\text{C}$  to  $10^{\circ}\text{C}$ .

Ans.

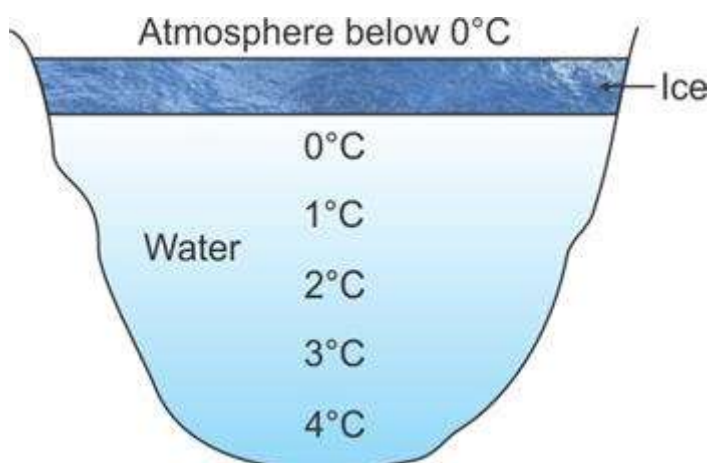


14. What is the difference between Heat and Temperature?

Heat	Temperature
The heat of an object is the total energy of all the molecular motion inside that object.	Temperature is a quantity which tells the thermal state of a body (i.e., the degree of hotness or coldness of the body).
SI unit of heat is Joule	SI unit of Temperature is Kelvin
Unit of heat are <b>Joules, Calories</b>	Unit of temperature are <b>Fahrenheit, Celsius, Kelvin</b>
Heat is denoted by <b>Q</b>	Temperature is denoted by <b>T</b>
The amount of heat contained in a body depends on the mass, temperature and material of the body.	The temperature of a body depends on the average kinetic energy of its molecules due to their random motion.
It's a measure of the number of atoms multiplied by the energy possessed by each atom.	It is like a level which determines the direction in which the heat will flow. It is related to how fast the molecule within a substance are moving.
When the two bodies are placed in contact, the total amount of heat is equal to the sum of heat of individual bodies.	When the two bodies at different temperature are placed in contact the resultant temperature is a temperature in between the two temperatures.
Two bodies having same quantity of heat may differ in their temperature.	Two bodies having same temperature of heat may differ in the quantities of heat contained them.
Heat is measured by Calorimeter.	Temperature is measured by Thermometer.

15. Draw a diagram showing the temperature of various layers of water in an ice covered pond.

Ans.



16. Explain why Water pipes in colder countries often burst in winter.

Ans. On winter nights, as the atmospheric pressure starts falling below  $4^{\circ}\text{C}$ , water in the pipe lines expand and exert a great pressure on the pipes, causing them to burst.

17. “ In winter, water tanks (or ocean) start freezing from the surface and not from the bottom”- Why?

Ans. In winters, when temperature falls, the surface of water in the tank contracts, becomes denser and sinks to the bottom. A circulation is thus set up until the entire water in the tank reaches its maximum density at  $4^{\circ}\text{C}$ . If the temperature falls further, then the top layer expands and remains on the top till it freezes. Thus, water in a tank starts freezing from the top and not from the bottom.

18. How Fishes survive in ponds even when the atmospheric temperature is well below  $0^{\circ}\text{C}$ .

Ans. The anomalous expansion of water helps preserve aquatic life during very cold weather. When temperature falls, the top layer of water in a pond contracts becomes denser and sinks to the bottom. A circulation is thus set up until water in the pond reaches its maximum density at  $4^{\circ}\text{C}$ . If the temperature falls further, then the top layer expands and remains on the top till it freezes. Thus, even though the upper layer is frozen, the water near the bottom is at  $4^{\circ}\text{C}$  and the fishes can survive in it easily.

19. A hollow glass sphere which floats with its entire volume submerged in water at  $4^{\circ}\text{C}$ , sinks when water is heated above  $4^{\circ}\text{C}$ .

Ans. On heating water above  $4^{\circ}\text{C}$ , the density of water decreases. As a result, the up thrust acting due to water on hollow glass sphere also decreases, which causes it to sink.

20. A glass bottle completely filled with water and tightly closed at room temperature is likely to burst when kept in the freezer of a refrigerator.

Ans. Inside the freezer, when the temperature of water falls below  $4^{\circ}\text{C}$ , the water in the bottle starts expanding. If the bottle is completely filled and tightly closed, there is no space for water to expand, and hence, the bottle may burst.

**21. What is an Ecosystem? Name its two components.**

**Ans.** A unit composed of biotic components (i.e. producers, consumers and decomposers) and abiotic components (i.e. light, heat, rain, and humidity, inorganic and organic substances) is called an ecosystem.

Its two components are

- Biotic Components (i.e. producers, consumers and decomposers)
- Abiotic components (i.e. light, heat, rain, and humidity, inorganic and organic substances)

**22. What are Products in Ecosystem?**

**Ans. Products** are that biotic Components of Ecosystem who can make their own food by absorbing Sun light.

Example: Green Trees, Some Bacteria etc.

**23. State the importance of green plants in an ecosystem.**

**Ans.** Green plants absorb most of the energy falling on them and by the process of photosynthesis they produce food for the consumers. Plants, being primary producers are of great importance in the ecosystem. They also maintain the balance of oxygen and carbon dioxide on earth.

**24. What are called Consumers in the Ecosystem?**

**Ans.** Consumers are that biotic Components of Ecosystem who are unable to prepare food by themselves and they are depend on Product for food.

Consumers are three types:

- i. Primary Consumer: Example- Krill
- ii. Secondary Consumer: Small Fish
- iii. Tertiary Consumer: Large Fish

**25. Write the difference between the producers and consumers.**

**Ans.**

<b>Product</b>	<b>Consumer</b>
Producer makes its own food	Consumer obtains energy by feeding on others.
Producers are independent	Consumers are dependent
Producers use photosynthesis	Consumers use respiration
Producers concentrate energy into complex molecules	Consumers convert these into simpler molecules

**26. What is a food chain?**

**Ans.** A food chain shows the feeding relationship between different living things in a particular environment or habitat. Often, a plant will begin a food chain because it can make its own food using energy from the Sun. In addition, a food chain represents a series of events in which food and energy are transferred from one organism in an ecosystem to another. Food chains show how energy is passed from the sun to producers, from producers to consumers, and from consumers to decomposers.

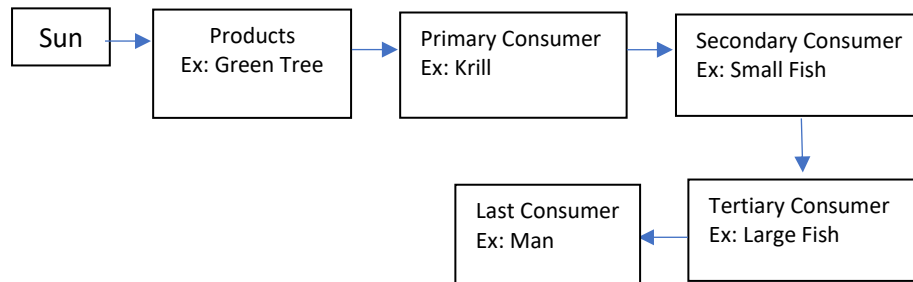
**27. Why energy flow in Ecosystem is called Linear?**

**Ans.** The energy flow in ecosystem is linear i.e., it moves in a fixed direction. The solar energy is absorbed by plants and a part of it is converted into food. These plants (or primary producers) are then eaten by the primary consumers, which are consumed by secondary consumers and the secondary by tertiary consumers. This

cycle is unidirectional. The dead and decomposed are fed by decomposers, which return the nutrients to the soil. At the end, the energy reaches the degraded state. It does not return to the sun to make the process cyclic, thus energy flow is linear.

**28. Draw a Line Diagram of Food Chain?**

Ans.



**29. State the functions of decomposers in an ecosystem.**

Ans. The role of a decomposer is to break down dead organisms and then feed on them. The nutrients created by the dead organisms are returned to the soil to be later used by the producers. Once these deceased organisms are returned to the soil, they are used as food by bacteria and fungi by transforming the complex organic materials into simpler nutrients. The simpler products can then be used by producers to restart the cycle. These decomposers play an important role in every ecosystem.

**30. State the law which governs the energy flow in an ecosystem.**

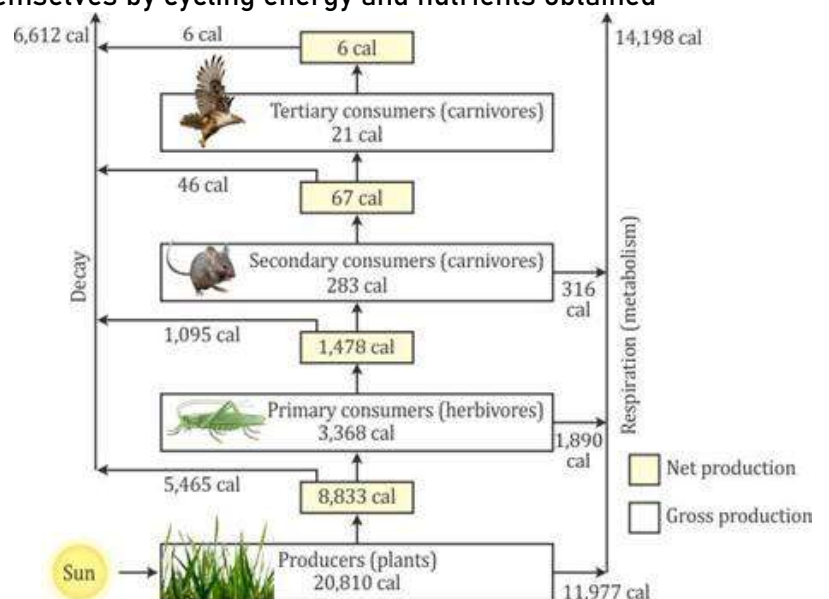
Ans. The laws of thermodynamics govern the energy flow in the ecosystem.

- **According to the first law of thermodynamic**, the energy can be transformed from one form to the other form, but it can neither be created nor destroyed.
- **According to the second law of thermodynamics**, when energy is put to work, a part of it is always converted in un-useful form such as heat mainly due to friction and radiation.

**31. Describe the energy flow in an ecosystem.**

Ans. Ecosystems maintain themselves by cycling energy and nutrients obtained from external sources. At the first trophic level, primary producers (plants, algae, and some bacteria) use solar energy to produce organic plant material through photosynthesis. Herbivores—animals that feed solely on plants—make up the second trophic level. Predators that eat herbivores comprise the third trophic level; if larger predators are present, they represent still higher trophic levels.

Decomposers, which include bacteria, fungi etc. break down wastes and dead organisms and return nutrients to the soil.



**32. What are the characteristics of Energy Sources?**

Ans. A source of energy should be such that it can provide an adequate amount of useful energy at a steady rate over a long period of time. It should be safe and convenient to use, economical and easy to store and transport.

**33. State two characteristics which a source of energy must have.**

Ans. From the point of view of availability, the energy sources are divided into the following two groups:

- A source of energy should be safe and convenient to use.
- A source of energy should be economical and easy to store and transport.

**34. What is meant by the renewable and non-renewable sources of energy?**

Ans. **Renewable Source of Energy:** The natural sources providing us energy continuously are called renewable sources of energy.

Example: Sun, Flowing Water, Wind etc.

**Non-renewable Source of Energy:** The sources of energy which have accumulated in nature over a very long period of time and cannot be quickly replaced when exhausted are called non-renewable sources of energy.

Example: Coal, Petroleum, Natural Gas etc.

**35. What is the main source of Renewable Energy?**

Ans. The main source of Renewable energy are:

- a. Sun
- b. Wind
- c. Flowing Water
- d. Bio Mass and Bio Fuels from waste
- e. Tides
- f. Oceans
- g. Geo- Thermal spots
- h. Nuclear Energy.

**36. What is solar energy?**

Ans. The energy obtained from Sun is called solar energy.

**37. How is the solar energy used to generate electricity in a solar power Plant?**

Ans. A solar power plant is a device in which heat energy of sun is used to generate electricity. It consists of a large number of concave reflectors, at the focus of which there are black painted water pipes. The reflectors concentrate the heat energy of the sun rays on the pipes due to which water inside the pipes starts boiling and produces steam. The steam thus produced is used to rotate a steam turbine which drives a generator producing electricity.

**38. What is Solar Constant?**

Ans. The average solar energy reaching the upper atmosphere of earth per second on an area of 1 metre<sup>2</sup> is called Solar Constant and it is estimated to be nearly 1.34 kW/m<sup>2</sup>.

**39. How Solar Energy is beneficial to us?**

Ans. The solar energy reaching the earth's surface is absorbed by land, planes and water bodies like rivers lakes and oceans etc. the solar energy absorbed by land and water bodies causes winds, storms, rains, snow falls and sea waves etc. While

the solar energy absorbed by plants is utilized by them in preparing their food by the process of photosynthesis.

**40. What is a solar cell?**

Ans. A solar cell is an electrical device that converts light energy directly into electricity with the help of photovoltaic effect.

**41. State two uses of solar cells.**

Ans. Two uses of solar cells are as listed below:

- They do not require maintenance and last over a long period of time at zero running cost.
- They are very useful for remote, inaccessible and isolated places where electric power lines cannot be laid. Solar cell produces d.c. (direct current).

**42. State whether a solar cell produces a.c. or dc.**

Ans. Solar cells are usually made from semiconductors like silicon and gallium with some impurity added to it. When sunlight is made incident on a solar cell, a potential difference is produced between its surface, due to which a current flow in the circuit connected between the opposite faces of the semiconductor.

**43. Write disadvantage of using a solar cell.**

Ans. The initial cost of a solar panel is sufficiently high.

**44. What is wind energy?**

Ans. The kinetic energy of the moving large masses of air is called the wind energy.

**45. How is wind energy used to produce electricity?**

Ans. Wind energy is used in a wind generator to produce electricity by making use of wind mill to drive a wind generator.

**46. How much electric power is generated in India using the wind energy?**

Ans. At present in India, more than 1025 MW electric power is generated using wind energy.

**47. State advantages and limitations of using wind energy for generating electricity.**

Ans. **Advantages of using wind energy:**

- It does not cause any kind of pollution.
- It is an everlasting source.

**Limitations of using wind energy:**

- The establishment of a wind farm is expensive.
- A large area of land is needed for the establishment of a wind farm.

**48. What is called Bio Energy?**

Ans. The chemical Energy stored in the bio mass called bio energy.

**49. What are called Global Gas Plant?**

Ans. In India we use two types of bio Gas Plants:

- a. The floating gas holder type and
- b. The fixed dome types.

These are called Global Gas Plant, because the main bio mass used in these plants is called Slurry, which is the mixture of animal dung in water.



**50. State two differences between the Renewable and Non- Renewable Source of Energy,**

Ans.

Renewable Resources	Non-renewable Resources
It can be used again and again throughout its life.	It cannot be used again and again as it is limited which can be depleted one day.
They are the energy resources which cannot be exhausted.	They are the energy resources which can be exhausted one day.
It is environment-friendly as the amount of carbon emission is low.	It is not environment-friendly as the amount of carbon emission is high.
These resources are present in unlimited quantity.	These resources are present in a limited quantity only.
The total cost of these resources is low.	The total cost of these resources is comparatively high.
These resources are pollution free.	These resources are not pollution free.
The maintenance cost of the renewable resources is very high.	The maintenance cost of the renewable resources is low.
Requires large land area for the installation of the power plant.	Requires less land area for the installation of the power plant.
It is sustainable	It is exhaustible
The rate of renewal is greater than the rate of consumption.	The rate of renewal is lower than the rate of consumption.
Causes no harm to life existing on the planet earth.	Adversely affect the health of humans by emitting smoke, radiations, carcinogenic or cancer-causing elements into the environment.
Sunlight, are the examples of renewable resources.	Coal, petroleum, natural gases, batteries, are the examples of non-renewable resources

**51. What is High Tide and Low Tide?**

Ans. The rise of ocean water due to attraction of Sun and Moon is called High Tide and fall of Ocean water is called Low Tide.

**52. What is Tidal Energy?**

Ans. The energy possessed by rising and falling water in tides is known as Tidal Energy.

**53. What is Ocean Thermal Energy?**

Ans. The energy available due to the difference in temperature of water at the surface and at deeper levels of ocean is called Ocean Thermal Energy (OTE).

**54. What are called Ocean Thermal Energy Conversion Power Plant?**

Ans. Ocean thermal energy is harnessed for producing electricity by a device called Ocean Thermal Energy Conversion Power Plant (OCTEC Power Plant).

**55. What is Oceanic Waves energy?**

Ans. The kinetic energy possessed by such fast moving oceanic waves is called Oceanic Waves Energy.

**56. What is Geo thermal Energy?**

Ans. The heat energy possessed by rocks inside the earth is called Geo Thermal Energy.

**57. What is hydro energy?**

Ans. The kinetic energy possessed by flowing water is called the water or hydro energy.

**58. Explain the principle of generating electricity from hydro energy.**

Principle of a hydroelectric power plant is that the water flowing in high altitude rivers is collected in a high dam (or reservoir). The water from the dam is then allowed to fall on a water turbine which is located near the bottom of the dam. The shaft of the turbine is connected to the armature of an electric generator or dynamo.

**59. How much hydroelectric power is generated in India?**

At present only 23% of the total electricity is generated by the hydro energy.

**60. State the advantages and disadvantages of producing hydroelectricity.**

Ans. **Advantages of producing the hydroelectricity:**

- It does not produce any environmental pollution.
- It is a renewable source of energy.

**Disadvantages of producing hydroelectricity:**

- Due to the construction of dams over the rivers, plants and animals of that place get destroyed or killed.
- The ecological balance in the downstream areas of rivers gets disturbed.

**61. What is nuclear energy? Name the process used for producing electricity using the nuclear energy.**

Ans. When a heavy nucleus is bombarded with slow neutrons, it splits into two nearly equal light nuclei with a release of tremendous amount of energy. In this process of nuclear fission, the total sum of masses of products is less than the total sum of masses of reactants. This lost mass gets converted into energy. The energy so released is called nuclear energy.

Principle: The heat energy released due to the controlled chain reaction of nuclear fission of uranium-235 in a nuclear reactor is absorbed by the coolant which then passes through the coils of a heat exchanger containing water. The water in heat exchanger gets heated and converts into steam. The steam is used to rotate the turbine which in turn rotates the armature of a generator in a magnetic field and thus produces electricity.

**62. What is Nuclear Fission?**

Ans. When uranium nucleus is bombarded with a slow neutron it splits into two nearly equal light nuclei and large amount of energy is released. This phenomenon is called Nuclear Fission.

**63. What is Nuclear Fusion?**

Ans. When two light nuclei combine to form a heavy nucleus at a very high temperature and high pressure, a tremendous amount of energy is released. This phenomenon is called Nuclear Fusion.

**64. State the advantages and disadvantages of using nuclear energy for producing electricity.**

Ans. **Advantages of using nuclear energy:**

- A very small amount of nuclear fuel can produce a tremendous amount of energy.
- Once the nuclear fuel is loaded into nuclear power plant, it continues to release energy for several years.

**Disadvantages of using nuclear energy:**

- It is not a clean source of energy because very harmful nuclear radiations are produced in the process.
- The waste causes environmental pollution.

**65. What percentage of total electrical power generated in India is obtained from nuclear power plants?**

Ans. At present only about 3% of the total electrical power generated in India is obtained from the nuclear power plants.

**66. Name two places in India where electricity is generated from nuclear power plants.**

Ans. **Tarapur in Maharashtra and Narora in Uttar Pradesh** are the places where electricity is produced using nuclear energy.

**67. What is Coal?**

Ans. Coal is a nonrenewable source made up of complex compounds of Carbon, Hydrogen and Oxygen along with some free carbon and compounds of nitrogen and Sulphur.

**68. What is Petroleum?**

Ans. It is a complex mixture of many hydrocarbons with water, salt, earth particles and other compounds of Carbon, Oxygen, Nitrogen and Sulphur.

It is a Non-Renewable Source of Energy.

It is lighter than water and does not mix with it.

**69. What is Refining?**

Ans. The process of separating useful components from crude petroleum is called Refining which is done by fractional distillation in big oil refineries set up for this purpose.

**70. What is LPG?**

Ans. The petroleum gas liquefied under pressure is called liquefied petroleum Gas (LPG).

**71. What do you mean by degradation of energy? Explain it by taking two examples of your daily life.**

Ans. The gradual decrease of useful energy due to friction etc. is called the degradation of energy.

Examples:

- When we cook food over fire, the major part of heat energy from the fuel is radiated out in the atmosphere. This radiated energy is of no use to us.
- When electrical appliances are run by electricity, the major part of electrical energy is wasted in the form of heat energy.

**72. State ways for the judicious use of energy.**

Ans. The ways for the judicious use of energy are:

- a. The fossil fuels such as coal, petroleum, natural gas should be used only for the limited purposes when there is no other alternative source of energy available.
- b. The wastage of energy should be avoided.
- c. Efforts must be made to make use of energy for community or group purposes.
- d. The cutting of trees must be banned and more and more new trees must be roped to grow.
- e. The energy used in urban areas is much more than rural areas. In rural areas the use of renewable source of energy is easier than the urban areas. In rural areas we can use bio gas, wind energy, hydro energy for running lights and tube wells.
- f. Efforts must be made to obtain nuclear energy by the controlled nuclear fusion of deuterium nuclei present in heavy water available in sea. This will then become an endless source of energy.
- g. Such techniques should be developed by which in near future, we may make the use of renewable sources such as solar energy, wind energy, hydro energy, bio energy ocean energy etc. as much possible to meet our requirement.

**73. What do you mean by greenhouse effect?**

Ans. Greenhouse effect is the process of warming of planet's surface and its lower atmosphere by absorption of infrared radiations of longer wavelength emitted out from the surface of planet.

**74. Name three greenhouse gases.**

Ans. Carbon-di-oxide, water vapour and methane are greenhouse gases.

**75. How many types of solar radiations coming from the sun?**

Ans. The solar radiations coming from the sun have high energy radiations such as gamma rays, X-rays, ultra-violet rays and low energy radiations such as visible light, infrared radiation and radio waves.

**76. Which type of solar radiations pass through the atmosphere of Earth?**

Ans. Our Earth's atmosphere is transparent only for visible light and infrared radiation of short wavelength.

**77. Which type of solar radiations are absorbed by Ozone layer?**

Ans. Gamma Rays, X-Rays, Ultraviolet Rays.

**78. Which types of Solar Rays are reflected back into the space?**

Ans. Infrared Radiation of long wavelength and radio waves are reflected back into the space.

**79. What results in the increase of carbon dioxide contents of earth's atmosphere?**

Ans. The concentration of carbon-di-oxide contents of earth's atmosphere has increased due to industrial growth, combustion of fossil fuels and clearing of forests.

**80. Name the radiations which are absorbed by the greenhouse gases.**

Ans. Infrared radiations of long wavelength are absorbed by the greenhouse gases.

**81. What would have been the temperature of earth's atmosphere in absence of greenhouse gases in it?**

Ans. In absence of greenhouse gases, the average temperature on earth would be  $-18^{\circ}\text{C}$ .

**82. State the effect of greenhouse gases on the temperature of earth's atmosphere.**

Ans. The greenhouses gases have an average warming effect on Earth's surface of about  $15.5^{\circ}\text{C}$  (or  $60^{\circ}\text{F}$ ).

**83. What do you mean by global warming?**

Ans. Global warming means the increase in average effective temperature near the earth's surface due to an increase in the amount of greenhouse gases in its atmosphere.

**84. What causes the rise in atmospheric temperature?**

Ans. With activities industrialization, deforestation, excess burning of fossil fuel, the concentration of greenhouse gases has increased on earth's atmosphere. This increase in the amount of greenhouse gases present in atmosphere has caused the rise in atmospheric temperature.

**85. State the cause of increase of greenhouse effect.**

Ans. The increase in greenhouse gases due to activities like industrialization, deforestation, natural gas exploration, burning of biomass, natural gas exploration, more use of gadgets like refrigerators has caused the increase of greenhouse effect.

**86. What will be the effect of global warming at the poles?**

Ans. At the poles, due to increase in temperature, the snow and ice will melt which will cause flood in coastal countries. The icebergs of dark land and oceans will melt, so the dark land and oceans will become uncovered and will absorb more heat radiations coming from sun, increasing the greenhouse effect further.

**87. State the effect of global warming in coastal regions.**

Ans. Due to global warming, the snow and ice around the poles will melt and cause flood in coastal countries.

**88. How will global warming affect the sea level?**

Ans. Due to melting of polar ice and glaciers, there will be rise in sea level on coastal wet lands. It would raise world wise sea level, thereby, many big cities in the coastal areas will be covered by sea water.

**89. How will global warming affect the agriculture?**

Ans. Global warming will cause drastic changes in the patterns of wind, rainfall etc. Thus, it will result in low agricultural yield.

**90. State two ways to minimize the impact of global warming.**

Ans. The two ways to minimize the impact Global Warming are-

- Use of renewable sources of energy to generate electricity in place of generating electricity from the fossil fuels-based power plants.
- Controlling population through family planning, welfare reforms and the empowerment of women.

**91. What is carbon tax? Who will pay it?**

Ans. The tax calculated on the basis of carbon emission from industry, number of employee hour and turnover of the factory is called carbon tax.

This tax shall be paid by industries. This will encourage the industries to use the energy efficient techniques.