

## Source of Energy

### 1. ONE MARK QUESTIONS

1. Write the energy conversion which takes place in hydropower plant.

Ans : [CBSE 2018,2017]

Potential/kinetic/mechanical energy into electrical energy.

2. Write any two applications of biogas.

Ans : [CBSE 2018]

- Biogas is used as clean fuel.
- The slurry left behind in biogas plant can be used as manure.

3. Name any two nuclear fuels used for the process of nuclear fission.

Ans : [CBSE 2016]

Uranium-235 and Plutonium or Thorium.

4. Compare the energy produced by fission of a uranium atom with the energy produced due to combustion of a carbon atom from coal.

Ans : [CBSE 2016]

The fission of an atom of uranium produces 10 million times the energy produced by combustion of 1 carbon atom.

5. Mention any two renewable or non-conventional sources of energy.

Ans : [CBSE 2016, 2014]

- (i) Solar energy (ii) Wind energy.

6. Name any two conventional sources of energy.

Ans : [CBSE 2016]

- (i) Coal (ii) Petroleum.

7. The chief constituent of biogas is methane. List any two other constituents of biogas. [CBSE2015]

Ans :

- (i) Hydrogen (ii) Hydrogen sulphide.

8. Blowing wind carries kinetic energy. Mention the two factors that causes wind to blow. [CBSE2015]

Ans :

- Unequal heating of the landmass and water bodies by solar radiation generates air movements which causes wind to blow.
- Hot air moves to replace cold air.

9. Mention any one reason due to which most of thermal

power plants are set up near coal or oil field.

Ans : [CBSE 2015]

It is because transmission of electricity is more efficient than transporting coal or petroleum over the same distance. That is why thermal power plants are set up near coal or oil fields.

10. Write the special technique used for mounting solar cell panels. Mention its advantage.

Ans : [CBSE 2015]

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

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11. If energy can neither be created nor be destroyed, explain with an example why should we worry about our energy resources? [CBSE 2015]

Ans :

Energy remains conserved but energy lost to surrounding in less usable forms leads to energy crisis. For example, electric bulb converts electric energy to useless heat energy besides light energy.

12. Name two fossil fuels. [CBSE 2015]

Ans :

- (i) LPG (ii) Coal

13. Name four gases present in biogas.

Ans : [CBSE 2015]

- Methane,
- Hydrogen,
- Hydrogen sulphide,
- Carbon dioxide.

14. Mention the purpose of blackening the interior of a solar cooker. [CBSE 2015]

Ans :

It is because black surface absorbs more (98%) heat as compared to white or reflecting surface or light coloured surfaces.

15. Name the characteristic features of micro organisms which help in production of biogas in biogas plants.

**Ans :** [CBSE 2015]

The micro-organisms are anaerobic bacteria which break down organic matters and produce biogas in absence of oxygen (anaerobically).

16. List two steps of energy conversions in thermal power plants. [CBSE 2015]

**Ans :**

Chemical energy of fuel is converted into Heat energy. Heat energy is used to produce steam which runs turbine and produce electricity (electric energy).

17. Name the major constituents of natural gas.

**Ans :** [CBSE 2015]

Methane is major constituent of natural gas.

18. Name the part of a biogas plant where reactions take place in absence of oxygen. [CBSE 2014]

**Ans :**

Digester is part of biogas plant where reaction takes place in absence of oxygen.

19. Name any two elements which are used for fabrication of solar cells. [CBSE 2014,2012]

**Ans :**

Silicon and silver are used in fabrication of solar cells.

20. State the reason for calling fossil fuels as non-renewable source of energy. [CBSE 2014]

**Ans :**

These resources take millions of years in their formation, therefore, cannot be replaced, hence called non-renewable sources.

21. Mention the minimum velocity of wind required for obtaining electric power with a wind mill generator.

**Ans :** [CBSE 2014]

**Ans :**

15 km/hour.

22. Name two combustible components of biogas.

**Ans :** [CBSE 2014]

(i) Methane (ii) Hydrogen.

23. Give one example each of renewable and non-renewable source of energy. [CBSE 2014]

**Ans :**

(i) Renewable source of energy is Sun.  
(ii) Coal is non-renewable source of energy.

24. Name a non-conventional renewable source of energy which can be harnessed for 24 hours throughout the year.

**Ans :** [CBSE 2014]

Geothermal energy is non-conventional source of energy which can be harnessed for 24 hours throughout the year.

25. List two forms of energy in which solar energy manifests itself in oceans.

**Ans :**

(i) Ocean thermal energy, (ii) Tidal energy.

26. Mention the minimum temperature difference required between surface water and the water at depth of up to 2 km in an ocean thermal energy plant.

**Ans :** [CBSE 2014, 2013]

20° C should be minimum difference in temperature.

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

**Ans :** [CBSE 2014]

The regions where molten rocks are formed in the deeper hot regions of earth crust which are pushed upward and trapped in certain regions called hot spots.

28. A black surface absorbs more heat radiations as compared to a white or reflecting surface under identical conditions. List two solar devices which make use of this property in their design.

**Ans :** [CBSE 2014]

(i) Solar cooker, (ii) Solar water heater.

29. Why a solar cooker painted black from outside?

**Ans :** [CBSE 2014]

Black surface absorbs maximum solar energy (98%), that is why solar cooker is painted black from outside.

30. Name the kind of energy possessed by wind and device used to harness it. [CBSE 2014]

**Ans :**

Kinetic energy is possessed by wind. Wind mill is the device which converts kinetic energy of wind into electrical energy.

31. What do you mean by fuel? [CBSE 2014]

**Ans :**

Fuel is a substance which produces heat and light on complete combustion.

32. Name any two characteristics which you look for in a good fuel. [CBSE 2014]

**Ans :**

a. It should have high calorific value.  
b. It should not create pollution.

33. What is acid rain? [CBSE 2013]

**Ans :**

The rain water in which oxides of sulphur and nitrogen (acidic) get dissolved form acid rain.

34. Write the name of the substance whose vapours are used to run the turbine of ocean thermal energy plant.

**Ans :** [CBSE 2013]

Ammonia vapours are used to run turbine of ocean

thermal energy plant.

35. Name the reaction responsible for large energy production in the sun. [CBSE 2013]

Ans :

Nuclear fusion reaction is responsible for large energy produced in the Sun.

36. Name one fuel used in nuclear reactor.

Ans : [CBSE 2013, 2012]

Uranium is used as nuclear fuel.

37. List two nutrients that the slurry left behind in the biogas plant contain. [CBSE 2011]

Ans :

- Nitrogen
- Phosphorus are present in slurry left in biogas plants.

38. Biogas is also known as gobar gas. Justify.

Ans : [CBSE 2011]

The main constituent of starting material for production of biogas is cow dung therefore, it is called 'Gobar gas'.

39. List two practical uses of biogas in rural areas.

Ans : [CBSE 2011]

- It is used as fuel.
- It makes use of waste materials like animal dung into useful manure for crops.

40. Name the chief component of solar cells. What energy conversion takes place in solar cell? [CBSE 2010]

Ans :

Silicon is chief component of solar cell. It converts sunlight into electricity i.e., solar energy into electrical energy.

41. Why solar cookers are to be covered with glass plate?

Ans : [CBSE 2010]

Ans :

Solar cookers are covered with glass plate because it shows green house effect i.e., it traps solar radiations inside and does not allow to escape them to increase the temperature inside solar cooker.

42. Construction of dams submerges large areas of forests, how does this contribute to the greenhouse effect?

Ans : [CBSE 2010]

Large eco-systems are destroyed when submerged under water in dams. The vegetation which is submerged rots under anaerobic conditions and give rise to large amounts of methane which causes greenhouse effect.

43. How is nuclear energy generated during nuclear fusion?

Ans : [CBSE 2008(C)]

Fusion means joining lighter nuclei to make a heavier nucleus most commonly, isotopes of hydrogen to create helium



It releases tremendous amount of energy, according to  $E = \Delta mc^2$  where  $\Delta m$  is called mass defect (difference in mass of reactants and products),  $c$  is velocity of light.

44. How has the traditional use of wind energy been modified for our convenience. [CBSE 2008]

Ans :

Rotatory motion of wind mill, with the help of wind energy is utilized to

- lift water from a well or
- turn the turbine of electric generator that generates electricity.

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## TWO MARKS QUESTIONS

45. Why is there a need to harness nonconventional sources of energy? Give two main reasons.

Ans : [CBSE SP 2018]

- It is because non-conventional sources of energy are limited.
- They create lot of pollution.

46. Burning of fossil fuels is cause of global warming. Give reason in support of this statement. [CBSE 2017]

Ans :

Burning of fossil fuels produces carbon dioxide and water vapours which trap heat of sun radiations and increase the temperature of earth causing global warming.  $\text{CO}_2$  is greenhouse gas.

47. List the products of combustion of fossil fuels. State the harmful effects of products on environment.

Ans : [CBSE 2017]

Ans : Carbon dioxide and  $\text{H}_2\text{O}$  are main products of fossil fuels. Sulphur dioxide, oxides of nitrogen, carbon monoxide are also formed which create pollution,

- $\text{CO}_2$  causes greenhouse effect.
- Oxides and sulphur and nitrogen cause acid rain.

48. Biogas is an excellent fuel. Justify the statement giving two reasons. [CBSE 2015]

Ans :

- Biogas is clean fuel as it does not create pollution.

- b. It makes use of waste materials and slurry left is used as a manure.
49. Briefly describe the working of thermal power plant. Why thermal power plants are set up near oil or coal fields?  
**Ans :** [CBSE 2015]  
 Working of Thermal Power Plant :  
 a. Large amount of fossil fuels are burnt in thermal power plants .  
 b. Heat generated converts water into steam.  
 c. Steam runs turbine and generates electricity.  
 It is because transmission of electricity is more efficient than transporting coal or petroleum over the same distance. That is why thermal power plants are set up near coal or oil fields.
50. Define fuel. List any two characteristics that you would look for in a good fuel. [CBSE 2014]  
**Ans :**  
 Fuel is a substance which produces heat as well as light on complete combustion.  
 Characteristics of good fuel :  
 a. It should be cheap and readily available.  
 b. It should not create pollution.
51. Out of elements A and B with mass number 2 and 235 respectively, which one is suitable for (i) fuel of a nuclear reactor (ii) making a hydrogen bomb. Name the nuclear reaction involved in each case. Write one difference between two types of reactions.  
**Ans :** [CBSE 2014, 2012]  
 (i) U- 235 is used as a fuel in nuclear reactor.  
 (ii) Element with mass number 2 i.e.,  $^2_1\text{H}$  is used in hydrogen bomb which is based on nuclear fusion reaction between isotopes of hydrogen to produce helium.  
 In nuclear reactor nuclear fission reaction takes place where as in hydrogen bomb nuclear fusion reaction takes place.  
 In nuclear fission heavy nuclei break into smaller nuclei whereas in nuclear fusion small nuclei combine to form bigger nuclei.
52. A student constructed a box type solar cooker. He found that it did not work efficiently. Give any four possible mistakes in the construction and operation of the solar cooker. What maximum temperature can ordinarily be reached inside a solar cooker?  
**Ans :** [CBSE 2014]  
 He may not have used or not properly oriented any of the following:  
 a. Black painted aluminium sheet to absorb heat radiation.  
 b. Glass sheet to prevent escape of heat.  
 c. Mirror plates that reflect sunlight to fall on the glass sheet.  
 d. Black cooking vessel to absorb more heat radiations.  
 e. The maximum temperature reached in solar cookers is around 100-140 °C,
53. Explain why:  
 (i) Solar cookers are covered with glass plate.  
 (ii) The solar cooker is painted black from inside.  
**Ans :** [CBSE 2014]  
 (i) Glass plate does not allow heat to escape from solar cooker due to greenhouse effect.  
 (ii) Black colour absorbs maximum sunlight (98%).
54. What are the advantages of nuclear energy? [CBSE 2011]  
**Ans :**  
 A small amount of a fuel can generate large amount of energy. 1 atom of uranium produces 10 million times more energy than energy produced by 1 atom of carbon.
55. What is solar cell panel? Mention any three of its applications. [CBSE 2011]  
**Ans :**  
 Solar cell panel: Solar cell panel is a panel on which large number of solar cells are connected together in a particular arrangement.  
 Applications of solar panel:  
 a. It provides power for artificial satellites.  
 b. It is used for running irrigation water pumps.  
 c. It also provides power for street lighting.
56. Out of two solar cookers, one was covered with a plane glass slab and the other was left open. Which of the two solar cookers will be more efficient and why?  
**Ans :** [CBSE 2011]  
 The solar cooker covered with plane glass slab will be more efficient. The glass lid allows the sunlight to enter the solar cooker but does not allow trapped radiation to go out of solar cooker. Trapped heat inside increases the temperature. Glass lid also reduces heat loss due to reflection.
57. Biomass has been used as fuel since ancient times. How has it been modified to function as a more efficient fuel in recent past? [CBSE 2011]  
**Ans :**  
 Unlike other renewable energy sources, biomass can be converted directly into liquid fuels for our transportation needs. The two most common biomass fuels are ethanol and biodiesel.  
 a. Ethanol, an alcohol, is made by fermenting any biomass high in carbohydrates, like corn, through a process similar to brewing beer. It is mostly used as a fuel additive to cut down a vehicle's carbon monoxide and other smog-causing emissions.  
 b. Biodiesel, an ester, is made using vegetable oils, animal fats, algae, or even recycled cooking greases. It can be used as a diesel additive to reduce vehicle emissions or in its pure form to fuel a vehicle.  
 c. Heat can be used to chemically convert biomass into a fuel oil, which can be burned like petroleum to generate electricity.  
 d. Biomass can also be burned directly to produce steam for electricity production or manufacturing processes.

58. How are wastes produced in nuclear power plants different from those produced in a thermal power plants? What happens to the waste of a nuclear power plant?

**Ans :** [CBSE 2010]

The wastes obtained from nuclear power plants are highly radioactive which give out harmful radiations. Whereas in thermal power plants, wastes are not radioactive.

Disposal of nuclear waste:

- Nuclear waste are buried deep inside the earth kept in sealed lead nuclear waste container.
  - Some products are converted into less harmful products with short half life.
59. What happens when wood is burnt in a limited supply of oxygen? Name the residue left behind after the reaction and state the two advantages of using this residue as a fuel over wood. [CBSE 2010]

**Ans :**

When wood is burnt in limited supply of oxygen, volatile gaseous material gets collected in the form of wood gas. The vapours on condensation form wood tar which on distillation gives acetone and acetic acid. The residue left behind is wood charcoal used as a fuel.

Advantages of charcoal as fuel:

- It does not produce smoke whereas wood produces a lot of smoke.
  - Charcoal has higher calorific value than wood i.e., produces more energy than wood.
60. Name four gases commonly present in biogas. State two advantages of using this gas over fossil fuels. [CBSE 2010]

$H_2S$ ,  $CH_4$ ,  $H_2$ ,  $CO_2$  are present in biogas.

Advantages of using this gas over fossil fuels.

- It does not create pollution whereas fossil fuels create pollution.
  - It makes use of waste material, therefore cost effective where as fossil fuels are not.
61. What do you mean by 'ocean thermal energy'? How electricity can be generated from the energy? [CBSE 2010]

**Ans :** [CBSE 2010]

Ocean thermal energy: The energy which is obtained due to difference in temperature of water at the surface of oceans and deeper section is called ocean thermal energy.

Working:

- The warm surface water is used to boil a volatile liquid like  $NH_3$ .
  - The vapours of  $NH_3$  has kinetic energy which runs turbine of generator producing electricity.
62. Write the general principle involved in generating nuclear energy. Name one fuel used in a nuclear reactor. [CBSE 2010]

**Ans :** [CBSE 2010]

Uranium-235 undergoes fission reaction in nuclear reactor i.e., bigger nuclei of uranium divided into smaller nuclei where some mass changes to large

amount of energy which converts water into steam.

Steam runs turbine and produces electricity. Uranium-235, Plutonium or Thorium are used as nuclear fuel.

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63. In a solar cooker, the following arrangements are made. Write one function of each arrangement.
- The box is made of insulating material such as plastic or wood.
  - The inner walls of the box are painted black.
  - The box is covered with a transparent glass sheet.
  - A plane mirror is hanged at an angle at the top of the box.

**Ans :** [CBSE 2009]

- It does not allow heat to escape from solar cooker.
- It is done so as to absorb maximum amount of heat.
- Glass sheet allows solar radiations to enter but does not allow heat to escape and increase temperature of solar cooker.
- A plane mirror focuses sunlight and converts into strong beam which heat solar cooker.

64. Describe how hydro energy can be converted into electrical energy. Write any two limitations of hydro energy. [CBSE 2009]

**Ans :** [CBSE 2009]

The water is stored at a height in hydro power plants and then release it from height. The water falls on turbine from the height due to which turbine rotates and produces electricity.

Limitations:

- The dams can be constructed in hilly areas or at the river which are available in limited number.
  - Large areas of habitation and agricultural land get wasted and vegetation submerged produces greenhouse gases like  $CH_4$  which causes global warming.
65. How is energy generated in nuclear fission reactor? Why is large scale use of nuclear energy prohibited? [CBSE 2000]

**Ans :** [CBSE 2000]

In nuclear reactor, fission of radioactive material like uranium, plutonium or thorium is carried out.

Large energy is liberated which converts water into steam.

Steam runs turbine producing electricity. Large scale use of nuclear energy is prohibitive because disposal of

nuclear waste is very difficult.

### THREE MARKS QUESTIONS

66. What is a dam? Why do we seek to build large dams? While building dams, which three main problems should be particularly be addressed to maintain peace among local people? Mention them.

**Ans :** [CBSE 2018]

A dam is an arrangement in which very large amount of water is stored at a height on the rivers especially in hilly areas. Large dams are built to store more water and produce electricity continuously.

Problems:

- Rehabilitation of people near dam.
- Safeguard of plants and animals.
- Adequate compensation to farmers who lost their agricultural lands due to construction of dam.

67. List any three parameters on the basis of which a source of energy can be categorised as a good source of energy?

**Ans :** [CBSE 2016]

- It should have high calorific value.
- It should be cheap and readily available.
- It should not create pollution.

68. Write three disadvantages of using fossil fuels.

**Ans :** [CBSE 2016]

- It creates air pollution and acid rain.
- Its cost is increasing due to more demand.
- It is non-renewable, therefore, limited, cannot be replaced.

69. Solar cooker takes more time as compared to the LPG to boil potato or rice, yet Kunal uses solar cooker for such type of cooking.

- Why does Kunal use solar cooker instead of LPG? Give reason for your answer.
- Name the phenomenon which is responsible for obtaining high temperature in solar cooker?
- What is the motivation behind using solar cooker?

**Ans :** [CBSE 2016]

- Kunal use solar cooker instead of LPG because :
  - LPG on combustion gives carbon dioxide while solar cooker does not emit anything harmful.
  - Solar cooker cooks food slower than LPG, therefore minimum loss of nutrients.
  - Solar cooker is more cost effective than LPG.
- Greenhouse effect.
- Low cost involved and no pollution.

70. Write down three advantages of harnessing wind energy.

**Ans :** [CBSE 2016]

- It is environment friendly.
- It is efficient renewable source of energy,
- It is less expensive as there are no recurring expenses.

- A hydropower plant converts one form of energy into another. Name these two forms of energy.
- State two advantages of generating hydroelectricity compared to the generation of electricity in thermal power plant.

**Ans :** [CBSE 2016]

Hydropower makes use of kinetic energy of flowing water into electric energy.

Advantages:

- No pollution in hydropower station whereas thermal power plants pollutes air.
  - As renewable source of energy is used so it involves less recurring cost as compared to thermal power plant.
72. Enlist the energy changes taking place in hydroelectric power stations. [CBSE 2016]

**Ans :**

- Hydroelectric power plants convert the potential energy of falling water into electricity.
- In order to produce hydel electricity, high rise dams are constructed on the river to obstruct the flow of water and thereby collect water in larger reservoirs.
- The water level rises and in the process the kinetic energy of flowing water gets transformed into potential energy. The water is then allowed to fall from height which converts potential energy to kinetic energy.
- Due to falling water turbine rotates i.e., kinetic energy changes to mechanical energy which is then converted to electric energy with the help of dynamo connected to turbine.

73. Define the process of nuclear fission. Write the steps involved in generating electricity in a nuclear reactor.

**Ans :** [CBSE 2016,2015]

Nuclear fission is a process in which heavy nuclei break into lighter nuclei along with liberation of lot of energy.

- The heat energy produced in nuclear fission converts water into steam.
  - Steam run turbine and produce electricity.
74. (i) Define tidal energy.  
(ii) Explain how is tidal energy harnessed and write one limitation of the use of tidal energy.

**Ans :** [CBSE 2015]

- The rise of ocean water due to attraction of moon is called high tide and its fall is called low tide. The energy obtained from tides is called tidal energy.
- Tidal energy can be harnessed by constructing a dam across a narrow opening to the sea. A turbine fixed at the opening of dam converts tidal energy into electrical energy. The movement of water during high tide and low tide can be used to rotate turbine of generator and produce electricity.

Limitation :

- Very few sea coasts in the world have suitable sites for the purpose of harnessing tidal

energy.

- (b) The rise and falls of tides that happen only twice in a day is not sufficient to generate electricity continuously.

75. Biogas is an excellent fuel. Justify the statement giving two reasons. Mention the major constituent of biogas along with its percentage. [CBSE 2015]

Ans :

Biogas is an excellent fuel because:

- It is a clean fuel and requires minimum cost.
- It makes use of waste products and does not create pollution on combustion.

The major percentage of CH<sub>4</sub> in biogas is 75%.

76. Why do people oppose the construction of Tehri dam on the river Ganga and Sardar Sarovar project on the river Narmada.

or

Mention three disadvantages of producing hydro electricity by construction of dams.

or

List any three ways in which construction of dams for production of electricity adversely affects the environment of that place. [CBSE 2015]

Ans :

- People of the areas lose their agricultural land.
- Natural eco systems are destroyed.
- Vegetation which are submerged under water decompose by micro-organisms in absence of oxygen to form methane which causes global warming.

77. (i) Describe the structure of a wind mill.  
(ii) Give one example to illustrate that energy from windmill was used in the past to do mechanical work.

Ans : [CBSE 2015]

Wind mill: It consist of a structure similar to a large electric fan that is erected at some height on a rigid support as shown in diagram.



The energy of wind mill was harnessed in the past in doing mechanical work e.g., in water lifting pump, the rotatory motion of wind mill is utilised to lift water from the well.

78. Explain how is geothermal energy harnessed to produce electricity. [CBSE 2015]

Ans :

- Molten rocks formed in the deeper hot regions of earth crust are pushed upward and trapped in

certain regions called hot spots.

- When underground water comes in contact with the hot spot, steam is generated.
- Steam trapped is routed through pipes to a turbine and used to generate electricity.

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79. Explain how hydroelectricity is produced

Ans : [CBSE 2015]

- In hydroelectric plant, a dam is made and water is collected at height.
- The water from height is made to fall on turbine which rotates and produce electricity.

80. State any three reasons to justify that LPG is considered as an ideal fuel.

Ans : [CBSE 2014]

- It can be easily transported in liquefied form filled in cylinders.
- It has high calorific value.
- It does not create pollution.

81. State any three advantages of charcoal over wood.

Ans : [CBSE 2014]

- Charcoal has higher calorific value than wood.
- Charcoal bums without smoke and flame.
- It does not create pollution.

82. What is biomass? Name the reaction that takes place in the biogas plant. Write the main constituents of biogas. List two reasons for considering the biogas an ideal fuel for domestic use. [CBSE 2014]

Ans :

- Biomass: The dead parts of plants, trees and the waste materials of animals and human being is called biomass.
- The reaction which takes place in biogas plant is decomposition by microorganisms in absence of air.
- Biogas mainly consist of CH<sub>4</sub> and H<sub>2</sub>.
- Reasons:
  - Biogas is cheap and readily available in rural areas having biogas plants.
  - It does not create pollution.

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

Ans : [CBSE 2014]

A single wind mill cannot generate sufficient electricity

to be used for commercial purpose. The number of wind mills are erected over large area, which is known as wind energy farm.

To generate electricity, the rotatory motion of the windmill is used to turn the turbine of the electric generator. The energy output of each wind mill in a farm is coupled together to get electricity on a commercial scale.

84. Compare and contrast fossil fuels and the Sun as direct source of energy. [CBSE 2014]

Ans :

	Fossil fuels	Sun as source of energy
1.	It is non-renewable source of energy	It is a renewable source of energy.
2.	It creates pollution.	It does not create pollution..
3.	It involves regular expenses.	Solar based devices cost more initially but work for long time without recurring cost.

85. Compare the advantages of generating energy from biomass than getting it from hydropower plant.

Ans : [CBSE 2014]

or

Compare and contrast biomass and hydro electricity as sources of energy. [CBSE 2014]

Ans :

	Biomass as source of energy	Hydro electric power
1.	It does not lead to loss of vegetation and displacement of people.	It involves loss of vegetation and displacement of people during construction of dam.
2.	When used in biogas plant, it minimise the problem of waste disposal and produces manure for farms apart from biogas as fuel.	It generates electricity only.
3.	When used in biogas plant it gives clean fuel	During construction of dam vegetation submerged in water creates methane gas causing greenhouse effect.

86. State the principle of working of an ocean thermal energy power conversion plant. Explain how the plant works? Write one essential condition for it to operate properly.

Ans : [CBSE 2013]

- Ocean thermal energy plant is based on difference in temperature of ocean at the surface and at the deeper region.
- The warm surface is used to convert ammonia gas

into vapours which rotates turbine and generates electricity. The cold water from the depth of the ocean is pumped up and condense vapours of ammonia to form liquid ammonia.

- The essential condition for generation of electricity by ocean is that difference in temperature between surface and deeper region must be atleast 20° C.

87. Distinguish between renewable and non-renewable sources of energy. Also give an example of each of these resources.

Ans :

[CBSE 2012]

	Renewable	Non-renewable
1.	They are not likely to get exhausted in near future.	They are likely to get exhausted in near future.
2.	They create less or no pollution.	They create more pollution.
3.	They involve less recurring cost. Example: Solar energy from sun.	They involve recurring cost. Example: Coal and petrol.

88. Mention why is it not possible to make use of solar cells to meet our all energy needs? State three reasons to support your answer. Also mention three uses of solar cells.

Ans :

[CBSE 2012]

It is not possible to make use of solar cells to meet our all energy needs, because

- The entire process of production of solar cell is quite expensive especially due to employment of silver.
- It has low efficiency.
- During cloudy days and during nights, these cells will not produce electricity.

Uses:

- Solar cells are used for radio or wireless transmission systems.
- Artificial satellites and space probes like Mars orbiters use solar cells.
- Solar street lights are now being used extensively.

89. List any three hazards of nuclear waste.

or

How does the disposal of nuclear waste pose a problem for plant and animal life. [CBSE 2011]

Ans :

Hazards of nuclear waste:

- It leads to contamination of environment.
- The nuclear waste is radioactive which may cause genetic mutation in animals and plants.
- These radiations can cause cancer and ultimately death.

90. (i) Charcoal is a better fuel than wood, why?  
(ii) How does biogas plant reduce the problem of pollution? [CBSE 2011]

Ans :

- Charcoal has higher calorific value than wood. It burns without smoke and without flame.

(ii) Burning of cow dung cakes, plant waste creates lot of pollution. Human excreta also creates lot of pollution in rural areas. Biogas converts all the waste materials into useful and clean fuel.

91. a. What is geothermal energy?  
b. What are the advantages of wind energy?

Ans : [CBSE 2011]

- a. Geothermal energy: The energy obtained from the high temperature inside the earth due to molten rocks is called geothermal energy.  
b. Advantages of wind energy :  
1. Wind energy is renewable source of energy and  
2. It does not create pollution.

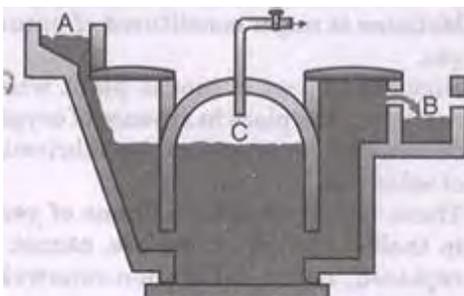
92. a. How does construction of dams across river get linked with production of greenhouse gases?  
b. How do technological inputs improve the efficiency of biomass fuels? [CBSE 2011]

Ans :

- a. Submerged vegetation decompose in presence of micro-organism and generate methane which is greenhouse gas.  
b. Biomass is used in biogas plant and produces biogas which is an excellent fuel. The residue left in biogas plant is used as manure.

93. Answer the following questions on the basis of the diagram of a biogas plant given below:

- a. What is biomass? How is biogas obtained from biomass?  
b. Why is biogas considered an ideal fuel?  
c. Name the parts labelled A, B and C in the diagram.



Ans : [CBSE 2008C]

- a. Biomass is remains of dead plants and animal waste materials. Biomass is decomposed by micro-organism to produce biogas in biogas plants.  
b. (1) Biogas makes use of waste materials. (2) It does not create pollution like biomass.  
c. A is inlet tank C is digester B is outlet tank.

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