

Oral Questions

Fill in the blanks:

1. The heat from inside the crust of earth is the source of _____. [Ans. geothermal energy]
2. Source of nuclear energy is _____ or _____. [Ans. nuclear fission, nuclear fusion]
3. The sun's energy is available in a _____ form. [Ans. diffused or scattered]
4. The micro-organism that does not require oxygen to breakdown complex compounds of cow dung slurry is _____. [Ans. anaerobic]
5. The gases that are responsible for green house effect are _____ and _____. [Ans. methane, carbon dioxide]
6. The energy of water is called _____. [Ans. hydroenergy]
7. The working substance in ocean-thermal-energy conversion plant is _____. [Ans. Ammonia]
8. Artificial satellites and space probes like Mars Orbiters use _____ as the main source of energy. [Ans. solar cell]
9. Kinetic energy of wind is known as _____. [Ans. wind energy]
10. _____ is a material that contains carbon and other combustible material. [Ans. biomass]

State True/False :

1. The reflector used in solar cooker increases its efficiency. [Ans. True]
2. The renewable source of energy is also known as conventional source of energy. [Ans. False]
3. The tidal energy can be harnessed by constructing a tidal dam. [Ans. True]
4. It is possible to get fossil fuels from the plant and animal waste that we produce today. [Ans. False]
5. Smokeless chulhas ensure better health for women and children. [Ans. True]
6. It is the sun's energy that sustains all forms of life on earth. [Ans. True]
7. Charcoal has a lower calorific value than coal. [Ans. False]
8. Natural gas is found above the crude oil trapped under the rocks deep inside the earth. [Ans. True]
9. Tidal energy is made available by the gravitational pull of the moon on the earth. [Ans. True]
10. The process of splitting of a heavy nucleus is known as nuclear fission. [Ans. False]

Solve the Puzzle

Instruction : Read the clues given below and fill up the blocks with appropriate word/term to complete the crossword puzzle given below : One 'word' has been done for you.

4 2

VERY SHORT ANSWER TYPE QUESTIONS

[1 MARK]

Previous Years' Questions

1. Name one fuel used in nuclear reactor.
[CBSE(CCE) 2012]
2. Name any two elements that are used in fabricating solar cells.
[CBSE(CCE) 2012]
3. Name the reaction responsible for large energy production in the sun.
[CBSE(CCE) 2012]
4. List two nutrients that the slurry left behind in the biogas plant contain.
[CBSE (CCE) 2011]
5. Biogas is also known as gobar gas. Justify.
[CBSE (CCE) 2011]
6. List any two advantages of burning charcoal over burning wood.
[CBSE (CCE) 2011]
7. List two practical uses of biogas in rural areas.
[CBSE (CCE) 2011]
8. What is the minimum speed of wind to run a windmill to maintain the necessary speed of turbine of an electric generator?
[AI 2008C]
9. How is nuclear energy generated during nuclear fusion?
[AI 2008C]
10. How has the traditional use of wind energy been modified for our convenience?
[AI 2008C]

Important Questions

11. A black surface absorbs more heat radiations as compared to a white or a reflecting surface under identical conditions. List two solar devices which make use of this property in their design.
12. Name the ultimate source of energy of fossil fuels.
13. The increase in demand for energy is affecting our environment adversely. List two such effects.
14. Mention any two measures that you would take to conserve electricity in your house.
15. Name the energy obtained from sea or ocean water due to the difference in temperature at the surface and in deeper sections of these water bodies.
16. Which part of the solar energy is responsible for heating the surfaces?
17. What is the maximum conversion efficiency of a solar cell?
18. Some of the gases are responsible for global warming. Name these gases.

19. What is the estimated wind power generation potential of India?
20. How much energy does earth's upper atmosphere receive per square metre per second?
21. What is the full form of CNG ?
22. Why is CNG considered as environmental friendly fuel?
23. Give the locations of hot springs in India.
24. Name the country which is popularly known as 'country of wind'.
25. Name the energy resource which can be utilised in the treatment of cancer.
26. Choose the renewable source of energy from the following list : Coal, biogas, Sun, natural gas.
27. Name the source of energy which is not directly related to the solar energy.
28. Name two dams/projects which faced opposition over their construction from the local public.
29. The cost of production of electricity in a thermal power station located in Bihar/Jharkhand/Orissa is lesser than that in Gujarat/Maharashtra. Do you agree? Justify your answer. [HOT]
30. What is the importance of hydropower plant in India?
31. Name two gases, other than carbon dioxide that are given out during burning of fossil fuels and contribute towards acid rain formation.

NCERT Questions

32. What is a good source of energy ?
33. What is a good fuel ?
34. If you could use any source of energy for heating your food, which one would you use and why ?
35. What are the disadvantages of fossil fuels ?
36. What is geothermal energy ?
37. What are the advantages of nuclear energy ?
[CBSE (CCE) 2011]
38. A solar water heater cannot be used to get hot water on
(a) a sunny day (b) a cloudy day
(c) a hot day (d) a windy day
39. Which of the following is not an example of a bioenergy source ?
(a) Wood (b) Gobar gas
(c) Atomic energy (d) Coal
40. Most of the sources of energy we use represent stored solar energy. Which of the following is not ultimately derived from the Sun's energy ?
(a) Geothermal energy
(b) Wind energy
(c) Nuclear energy
(d) Bio-mass

SHORT ANSWER TYPE QUESTIONS(I)

[2 MARKS]

Previous Years' Questions

1. Biogas is considered to be a boon to the farmers. Give reasons. [CBSE (CCE) 2011]
2. Give two advantages of using nuclear energy. [CBSE (CCE) 2011]
3. What is a solar cell panel ? Mention any three of its applications. [CBSE (CCE) 2011]
4. Mention any four limitations in harnessing wind energy on a large scale. [Delhi 2010]
5. What happens when wood is burnt in a limited supply of oxygen ? Name the residue left behind after the reaction and state two advantages of using this residue as a fuel over wood. [AI 2010]
6. Name four gases commonly present in biogas. State two advantages of using this gas over fossil fuels. [Foreign 2010]
7. How are the 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 ? [Foreign 2010]
8. 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 ? [CBSE (CCE) 2011, Delhi 2009C, HOTS] [CBSE Sample Paper 2009]
9. Why are many thermal power plants set up near coal or oil fields? [CBSE Sample Paper 2009]
10. (a) Name two elements which can be used for generation of electricity in a nuclear power plant.
(b) Why many nuclear power plants could not be installed in our country? Give two reasons. [CBSE Sample Paper 2009]
11. In a solar cooker, the following arrangements are made. Write one function of each arrangement.
(a) The box is made of insulating material such as plaster or wood.
(b) The inner walls of the box are painted black.
(c) The box is covered with a transparent glass sheet.
(d) A plane mirror is hinged at an angle at the top of the box. [AI 2009C]
12. Describe how hydro energy can be converted into electrical energy. Write any two limitations of hydro energy. [AI 2009C]
13. How is energy generated in a nuclear fission reaction ? Why is the large scale use of nuclear energy prohibitive ? [Delhi 2008C]
14. List any four characteristics of biogas on account of which it is considered an ideal fuel. [AI 2009C]
15. Name the type of nuclear reaction by which the Sun produces its energy. List two conditions which are present at the centre of the sun responsible for this reaction. [AI 2009C]

Important Questions

- How does burning of fossil fuels cause air and soil pollution ?
- List in tabular form three distinguishing features between a thermal power plant and a geothermal power plant.
- "Biogas is a better fuel than animal dung cakes". Justify this statement stating four reasons.
- State the energy transformation taking place at hydropower plants.
- State the energy conversion taking place in the solar cell panel.
- List two major drawbacks of solar heating devices.
- Why wind energy farms can be established only at specific locations? Give reasons to support your answer.
- The surface area of a concentrator type solar heater is 5 m^2 . It can reflect 80% of solar radiation incident on it while it absorbs the rest. Calculate the energy concentrated by the heater at its focus in 2 hours if solar energy was delivered to it at the rate of $0.4 \text{ kJ/ m}^2\text{s}$. [HOTS]
- Mention two differences between two different types of solar cookers.
- What is windmill? State the energy conversion taking place in the working of a windmill.
- Does flowing water have energy? If any, state the ways to harness it.
- How does biogas plant help in better sanitations of bio-waste materials?
- "Fossil fuels are known as conventional source of energy." Give reason.
- Name the device used to convert :
 - Solar energy into heat
 - Solar energy into electricity
- It is advantageous to convert biomass into a biogas rather than burning biomass directly. Why ?
- Name the three characteristics of fuels that determine their quality ?
- How is the supply of electricity maintained by a wind mill when there is no wind ? By a solar panel when there is no Sun ?

NCERT Questions

- Why are we looking at alternate sources of energy ?
- How has the traditional use of wind and water energy been modified for our convenience ?
- What kind of mirror concave, convex or plane would be best suited for use in a solar cooker ? Why ?
- What are the limitations of the energy that can be obtained from the oceans ?
- Can any source of energy be pollution-free ? Why or why not ?
- Name two energy sources that you would consider to be renewable. Give reasons for your choices.
- Give the names of two energy sources that you would consider to be exhaustible. Give reasons for your choices.
- Compare and contrast fossil fuels and the sun as sources of energy.
- Compare and contrast biomass and hydroelectricity as sources of energy.
- On what basis would you classify energy sources as
 - renewable and non renewable ?
 - exhaustible and inexhaustible ?Are the options given in (a) and (b) the same ?
- What are the qualities of an ideal source of energy ?

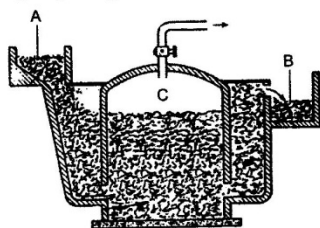
SHORT ANSWER TYPE QUESTIONS(II)

[3 MARKS]

Previous Years' Questions

- Distinguish between renewable and non-renewable sources of energy. Also give an example of each of these sources. [CBSE(CCE) 2012]
- Mention why is it not possible to make use of solar cells to meet all our energy needs ? State three reasons to support your answer. Also mention three uses of solar cells. [CBSE(CCE) 2012]
- Out of two elements A and B with mass number 2 and 235 respectively, which one is suitable for making
 - a nuclear reactor
 - a hydrogen bombName the nuclear reaction involved in each case. Write one difference between the two types of nuclear reactions. [CBSE(CCE) 2012]
- List any three hazards of nuclear waste. How does the disposal of nuclear waste pose a problem for the plant and animal life ? [CBSE (CCE) 2011]
- Charcoal is a better fuel than wood. Why ?
 - How does biogas plant help to reduce the problem of pollution ? [CBSE (CCE) 2011]
- What is geothermal energy ?
 - What are the advantages of wind energy ? [CBSE (CCE) 2011]
- How does construction of dams across the river get linked with production of greenhouse gases ?
 - How do technological inputs improve the efficiency of biomass fuels ? [CBSE (CCE) 2011]

8. 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.
 [AI 2008C]

Important Questions

13. Explain three disadvantages of burning fossil fuels.
 14. List three characteristics of a good source of energy and mention any three qualities of a good fuel.
 15. Explain ocean - thermal energy and how can it be harnessed. Mention any two limitations in obtaining the energy from the oceans ?
 16. Explain geothermal energy. How can it be harnessed to produce electrical energy ?
 17. Explain fission process by which nuclear energy is generated. Give three safety measures which should be taken while handling nuclear process.
 18. What is meant by nuclear waste ? State the main hazard of this waste on the living beings. How is this waste disposed off ?
 19. (a) Which property of water in ocean enables it to act as a store house of solar energy ?
 (b) List three forms in which energy from ocean can be harnessed ?
 (c) How are they different from each other ?
 20. With the help of a diagram, explain how the design of a box type solar cooker ensures minimum loss of heat from its inside. List its three limitations.

9. (a) Describe the steps involved in obtaining biogas explain what is meant by anaerobic decomposition
 (b) Which isotope of uranium can undergo fission readily ? [Delhi 2007]
 10. (a) Name the four gases commonly present in biogas
 (b) List two advantages of using biogas over fossil fuel [AI 2008]
 11. (a) Name the device used to convert
 (i) solar energy into heat, and
 (ii) solar energy into electricity.
 (b) Explain the principle of working of a wind mill [Delhi 2006]
 12. Write the principle of generation of electric power by boiling water type nuclear reactor. Name the coolant in such a reactor. [Delhi 2005C]

21. List three factors responsible for the wind. State the advantages in harnessing wind energy.
 22. What is meant by wind energy farm? Write one of its practical applications. Give any three limitations of using wind energy farm.
 23. List three energy sources that are considered to be inexhaustible. State three reasons in support of your answer. [HO]
 24. List two ways in which animal dung can be utilized as a fuel. Out of these two which one do you think is better. Justify your answer.
 25. Mention three advantages and three disadvantages of producing hydro electricity by building dams on rivers.
 26. (i) Why is hydrogen considered a better and cleaner fuel than CNG ?
 (ii) Mention any two areas where solar cells are used as source of energy.
 (iii) State the biggest hindrance in trapping geothermal energy.
 27. Why is there so much emphasis on changing over from petrol/diesel driven automobiles to CNG-driven vehicles? [HO]

NCERT Questions

28. Hydrogen has been used as a rocket fuel. Would you consider it a cleaner fuel than CNG ? Why or why not ?
 29. What are the limitations of extracting energy from :
 (a) the wind ? (b) waves ? (c) tides ?
 30. What are the advantages and disadvantages of using solar cooker ? Are there places where solar cookers will have limited utility ?
 31. What are the environmental consequences of the increasing demand for energy ? What steps would you suggest to reduce energy consumption ?

LONG ANSWER TYPE QUESTIONS

|| 5 MARKS

Previous Years' Questions

1. Explain why :
 (i) It is difficult to burn a piece of wood fresh from a tree.
 (ii) Pouring dry sand over the fire extinguishes it.

- (iii) It is difficult to use hydrogen as a source of energy
 (iv) Charcoal is considered a better fuel than wood [Delhi 2005]

Important Questions

2. What is solar water heater ? With the help of a schematic diagram, describe the principle and working of a solar water heater.
3. (i) What is nuclear energy ?
(ii) For peaceful purposes, how this energy can be utilised ? Explain it.
(iii) Name the recent project in India related to nuclear energy which faced opposition from the local public over its implementation. Why ?

NCERT Exemplar Problems

SHORT ANSWER TYPE QUESTIONS

1. Why is there a need to harness non-conventional sources of energy ? Give two main reasons.
2. Write two different ways of harnessing energy from ocean.
3. What steps would you suggest to minimise environmental pollution caused by burning of fossil fuels ?

LONG ANSWER TYPE QUESTIONS

4. What are the environmental consequences of using fossil fuels ? Suggest the steps to minimise the pollution caused by various sources of energy including non-conventional sources of energy.
5. Energy from various sources is considered to have been derived from the sun. Do you agree ? Justify your answer.
6. What is biomass ? Explain the principle and working of a biogas plant using a labelled schematic diagram.

VALUE BASED QUESTIONS

1. In an IT firm, there are sixty professionals, most of them come by their personal vehicle. Most of them come from the same locality.
(a) Will this practice of commuting help the nature ? Justify it.
(b) If not, what can they do to help the nature ?
(c) What associated values will the learner get from the idea developed to help the nature ?
2. A school organised a study tour for its students to observe, how do people in a village use energy resources for their living ? They observed that in one of the village people use wood and cow dung as a fuel while in the nearby village they saw modern technology was used by the villagers for better sanitation and management of their biowaste and sewage materials by establishing biogas plant.
(a) If you compare the situation of both the villages, which practice would you prefer to be the best and why ?
(b) State the associated values which you would get from this excursion tour.
3. The central government through its ministry of New and Renewable energy sources is continuously prompting the use of solar panels for electricity and solar heating system by various ways. Government mandated the use of solar water heating system at all government buildings, residential schools, educational colleges, hostels, hospitals etc. for efficient use of energy and its conservation. Nowadays most of the people prefer these methods.
(a) What kind of sources of energy are people preferring now ?
(b) Why are the practices of adopting these methods common now ?
(c) Name some renewable sources of energy that people are now adopting ?
(d) What message would you like to convey to the people ?
4. Slippery surface between colliding tectonic plates resulted in a huge release of energy into the sea and this resulted massive tsunami. The 2011 devastating tsunami rolled over many parts of Japan and caused huge damages. The disaster also caused the three reactors at Fukushima nuclear power plant to melt down which released dangerous harmful radiations into the surrounding areas and led to national power shortage.
(a) What could be the reason for damage in nuclear reactors ?
(b) How did it affect the environment and the people ?
(c) Do you think nuclear energy is a future source of energy ?
5. The world energy consumption pattern indicates that the energy consumption will be tripled in a period of 50 years. So, people should be engaged in promoting energy efficiency and conservation of precious sources of energy. Their effort needs to be replicated.
(a) As a responsible citizen of India, what steps would you take to conserve energy ?
(b) What message is conveyed to you by the information given above ?