



BIOLOGY

BOOKS - NAVNEET PUBLICATION

TOWARDS GREEN ENERGY

Examples

1. What is Energy?



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2. What are different types of Energy?



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3. What are different types of Energy?



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4. Where do we use electrical energy in our day-to-day life?



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5. How is Electric energy produced?



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6. Why is the energy in the coal called chemical energy?



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7. Why steam is used to rotate the turbine?



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8. How does nuclear fission take place?



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Exercise

1. Choose the correct alternative and write its alphabet against the sub question number:

Large.....are used in commerical power generation plants.

A. Machines

B. Generators

C. turbines

D. pannels

Answer: B



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2. Choose the correct alternative and write its alphabet against the sub question number:

The principle of electromagnetic.....was invented by Michael Faraday.

A. Induction

B. attraction

C. repulsion

D. expulsion

Answer: A



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3. Choose the correct alternative and write its alphabet against the sub question number:

.....is used to rotate the magnet in the generator.

A. Fan

B. Generator

C. Turbine

D. Panels

Answer: C



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4. Choose the correct alternative and write its alphabet against the sub question number:

In thermal power plants, the.....energy in the coal is converted into electrical energy through several steps.

A. Physical

B. Biological

C. Kinetic

D. Chemical

Answer: D



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5. Choose the correct alternative and write its alphabet against the sub question number:

Atin Andhra Pradesh power plant based on natural gas had been installed.

A. Hyderabad

B. Vishakapattanam

C. Samaralkota

D. Kakinada

Answer: C



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6. Choose the correct alternative and write its alphabet against the sub question number:

Burning of coal may cause serious health problems related tosystem.

A. Digestive

B. Respiratory

C. Nervous

D. excretory

Answer: B



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7. Choose the correct alternative and write its alphabet against the sub question number:

Incomplete combustion of fuels leads to formation of

- A. carbon dioxide
- B. carbon monoxide
- C. carbon tetrachloride
- D. All the above

Answer: B



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8. Choose the correct alternative and write its alphabet against the sub question number:

Solar cells are made of a special type of material called semiconductor such as.....

A. silicon

B. uranium

C. borosilicate

D. hydrogen

Answer: A



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9. Choose the correct alternative and write its alphabet against the sub question number:

.....of the following is eco-friendly energy resource.

A. Coal

B. Hydroelectric power

C. Fossil fuel

D. Atomic energy

Answer: B



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10. Choose the correct alternative and write its alphabet against the sub question number:

Which is the most abundant and renewable energy?

A. Thermal power

B. Solar energy

C. Fossil fuel

D. Atomic power

Answer: B



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11. Choose the correct alternative and write its alphabet against the sub question number:

What are the two technologies for harnessing solar energy?

A. Solar photovoltaics and solar thermal

B. Solar cooker and solar lamp

C. Heat capturing and Heat conversation

D. Active and passive technologies

Answer: A



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12. Choose the correct alternative and write its alphabet against the sub question number:

Large.....are used in commerical power generation plants.



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13. Choose the correct alternative and write its alphabet against the sub question number:

Which of the following is used in solar cooker to harvest the solar energy?

A. Solar panels

B. Silicon cell

C. Mirrors

D. Glass lid

Answer: D



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14. Choose the correct alternative and write its alphabet against the sub question number:

The solar lamp uses theenergy.

A. Heat

B. Light

C. Kinetic

D. Sound

Answer: C



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15. Choose the correct alternative and write its alphabet against the sub question number:
Water reservoir possesses.....energy.

A. Nuclear

B. Thermal

C. Kinetic

D. Potential

Answer: D



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16. State whether the following statements are true or false with proper explanation:

In thermal power plants, the turbines work on solar energy.



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17. State whether the following statements are true or false with proper explanation:

How to dispose the nuclear waste safely is a big challenge before the scientists.



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18. State whether the following statements are true or false with proper explanation:

The efficiency of power generation using coal plant is higher than that of power generation plant based on the natural gas.



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19. State whether the following statements are true or false with proper explanation:

Energy obtained from nuclear fission is eco friendly.



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20. State whether the following statements are true or false with proper explanation:

In hydroelectric power plant, the kinetic energy in water stored in dam is converted into potential energy of water.



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21. State whether the following statements are true or false with proper explanation:

The turbine is connected to electric generator therefore the magnet rotates and electric energy is thus produced.



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22. State whether the following statements are true or false with proper explanation:

Use of energy is unavoidable in our daily life,

but we must use it carefully and only in the required amount.



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23. State whether the following statements are true or false with proper explanation:

The machine which converts the potential energy of wind to electrical energy is called wind-turbine.



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24. State whether the following statements are true or false with proper explanation:

The potential difference available from a solar cell is independent of its area.



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25. State whether the following statements are true or false with proper explanation:

The power available from the solar cells is AC.



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26. Match the columns:

(1) Column I	Column II
(1) Polluting energy	(a) Soot particles
(2) Eco-friendly energy	(b) Thermal energy
	(c) Nuclear energy
	(d) Wind energy



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27. Match the columns:

(2) Column I	Column II
(1) Pollutants	(a) Wind energy
(2) Hazard to ecosystem	(b) Thermal energy
	(c) Nuclear energy
	(d) Soot particles



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28. Match the columns:

(3) Type of energy	Problem
(1) Nuclear energy	(a) Rehabilitation of displaced people
(2) Natural gas	(b) Rainy season and darkness
	(c) Limited reserves
	(d) Disposal of wastes



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29. Match the columns:

(4) Type of energy	Problem
(1) Solar energy	(a) Rehabilitation of displaced people
(2) Hydroelectric energy	(b) Rainy season and darkness
	(c) Limited reserves
	(d) Disposal of wastes



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30. Find the odd one out:

Kundankulam, Tarapur, Ravatabhata, Anjanvel



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31. Find the odd one out:

Samaralkota, Kudankulam, Bavanaa, Kondapalli



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32. Find the odd one out:

Tehari, Koyana, Srishailam, Tarapur



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33. Find the odd one out:

Edible oil , LPG, CNG, crude oil.



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34. Find the odd one out:

Hydroelectric energy, solar energy, Nuclear energy, wind energy



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35. Question based on tables:

Remake the table taking into account relation between entries in three columns:

I	II	III
Coal	Potential energy	Wind electricity plant
Uranium	Kinetic energy	Hydroelectric plant
Water reservoir	Nuclear energy	Thermal plant
Wind	Thermal energy	Nuclear power plant



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36. Explain the difference between Conventional and Non conventional sources of

energy.



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37. Explain the difference between Thermal electricity generation and solar thermal electricity generation.



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38. Explain with diagram step-by-step energy conversion in:

Thermal power plant.



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39. Define the following:

Nuclear power plant



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40. Explain the diagram step-by-step energy conversion in.

Hydro-electric power plant



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41. Explain the diagram step-by-step energy conversion in.

Solar thermal power plant:



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42. Explain with diagram step-by-step energy conversion in:

Power plant based on wind energy.



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43. Give Scientific Reasons :

The constructions of turbine is different for different types of power plants.



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44. Give scientific reasons:

It is absolutely necessary to control the fission reaction in nuclear power plant.



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45. Give scientific reasons:

Hydroelectric energy, solar energy and wind energy are called renewable energies.



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46. Give scientific reasons:

It is possible to produce energy from mW to MW using solar photovoltaic cells.



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47. Explain the following sentences:

Energy obtained from fossil fuels is not green energy.



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48. Explain the following sentences:

Saving energy is the need of the hour.



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49. Answer the following questions in brief:

Which fuel is used in thermal power plant?

What are the problems associated with this type of power generation?



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50. Other than thermal power plant, which power plants use thermal energy for power generation? In what different ways is the thermal energy obtained?



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51. Answer the following questions in detail:

What is meant by green energy? Which energy sources can be called green energy sources and why? Give examples.



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52. Answer the following questions in detail:

Give your opinion about whether hydroelectric plants are environment-friendly or not?



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53. Answer the following questions in detail:

What are the advantages of hydroelectric power generation?



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54. Answer the following questions in detail:

How is nuclear fission reaction carried out in nuclear power plants?



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55. How can you obtain the required amount of energy by connecting solar panels?



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56. What are the advantages and limitations of solar energy?



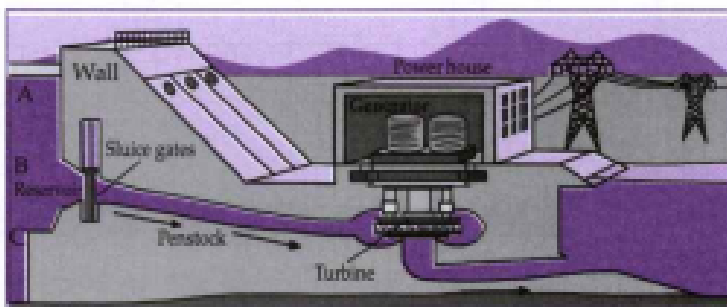
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57. Which types of power generation involves maximum number of steps of energy conversion? In which type of power generation is the number minimum?



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58.



Use your brain power :

With reference to point B, potential energy of how much water reservoir in the dam will be converted into kinetic energy?



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59. Draw schematic of power plant based on natural gas and answer the following questions:

At which place natural gas power plant is situated in Maharashtra?



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60. Draw schematic of power plant based on natural gas and answer the following questions:

How is pollution reduced in natural gas based power plants?



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61. Draw schematic of power plant based on natural gas and answer the following

questions:

Give two examples of eco-friendly electricity process.



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62. Write short note on Electrical energy generation and Environment.



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63. Complete the paragraph by choosing the appropriate words given in the brackets:

(marginal, array, cell, panel, string, current, power station, potential difference).

Many solar panels are connected in series and in parallel to generate required.....andsolar.....is the basic unit in solar electric plant, many solar cells come together to form a solar.....many solar panels connected in series form a solar.....and, many solar strings connected in parallel form a solar.....As we can obtain as much electrical power as

needed, they are used in applications which need.....power(e.g. calculators that run on solar energy) toof MW capacity.



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64. Read the paragraph and answer the questions given below:

Renewable energy is energy produced from sources that do not deplete or can be replenished within a human's life time. The most common examples include wind, solar,

geothermal, biomass, and hydroelectric power.

This is in contrast to non-renewable energy is derived directly or indirectly from the sun.

Sunlight can be captured directly using solar technologies. The sun's heat drives winds, whose energy is captured with turbines. Plants also rely on the sun to grow and their stored energy can be utilized for bioenergy. Not all renewable energy sources rely on the sun. For examples, geothermal energy utilizes the Earth's internal heat, tidal energy relies on the gravitational pull of the moon, and

hydroelectric power relies on the flow of water.

What is renewable energy?



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65. Read the paragraph and answer the questions given below:

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66. Read the paragraph and answer the questions given below:

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67. Read the paragraph and answer the questions given below:

Renewable energy is energy produced from sources that do not deplete or can be replenished within a human's life time. The most common examples include wind, solar, geothermal, biomass, and hydroelectric power.

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Sunlight can be captured directly using solar technologies. The sun's heat drives winds, whose energy is captured with turbines. Plants also rely on the sun to grow and their stored

energy can be utilized for bioenergy. Not all renewable energy sources rely on the sun. For examples, geothermal energy utilizes the Earth's internal heat, tidal energy relies on the gravitational pull of the moon, and hydroelectric power relies on the flow of water. Name the renewable sources of energy which are not dependent on sun. What are they dependent upon?



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68. Read the paragraph and answer the questions given below:

Renewable energy is energy produced from sources that do not deplete or can be replenished within a human's life time. The most common examples include wind, solar, geothermal, biomass, and hydroelectric power. This is in contrast to non-renewable energy is derived directly or indirectly from the sun. Sunlight can be captured directly using solar technologies. The sun's heat drives winds, whose energy is captured with turbines. Plants

also rely on the sun to grow and their stored energy can be utilized for bioenergy. Not all renewable energy sources rely on the sun. For examples, geothermal energy utilizes the Earth's internal heat, tidal energy relies on the gravitational pull of the moon, and hydroelectric power relies on the flow of water. Which type of energy do we mostly use in India?



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69. Read the information given below and solve the questions based on it.

Electric energy is produced in various ways like hydroelectric, wind power, solar energy, bio-fuel, etc. These energy sources are inexhaustible, sustainable. Besides, it does not cause any environment problem.

Answer the question:

Above information is about which type of energy?



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70. Read the information given below and solve the questions based on it.

Electric energy is produced in various ways like hydroelectric, wind power, solar energy, bio-fuel, etc. These energy sources are inexhaustible, sustainable. Besides, it does not cause any environment problem.

Answer the question:

Whether the fossil fuel is an examples of this energy?



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71. Read the information given below and solve the questions based on it.

Electric energy is produced in various ways like hydroelectric, wind power, solar energy, bio-fuel, etc. These energy sources are inexhaustible, sustainable. Besides, it does not cause any environment problem.

Answer the question:

Draw the flow chart of production of electric energy.



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72. Diagram based questions:

One solar panel produces a potential difference of 18 V and current 3A. Describe how you can obtain a potential difference of 72 volts and current of 9 A with a solar array using solar panels. You can use sign of a battery for a solar panel.



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73. Diagram based questions:

Observe the connections of cells shown in the following images:

Which connection will give you maximum

potential difference?

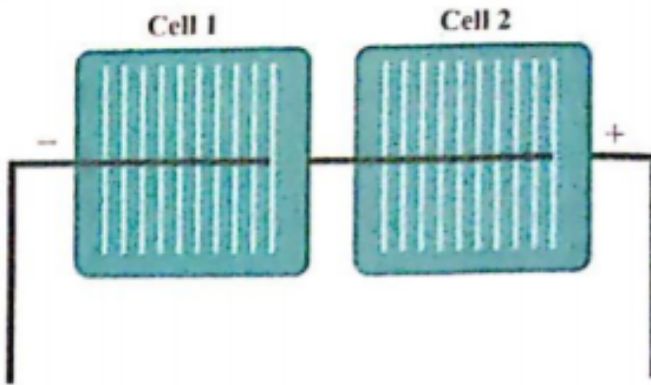
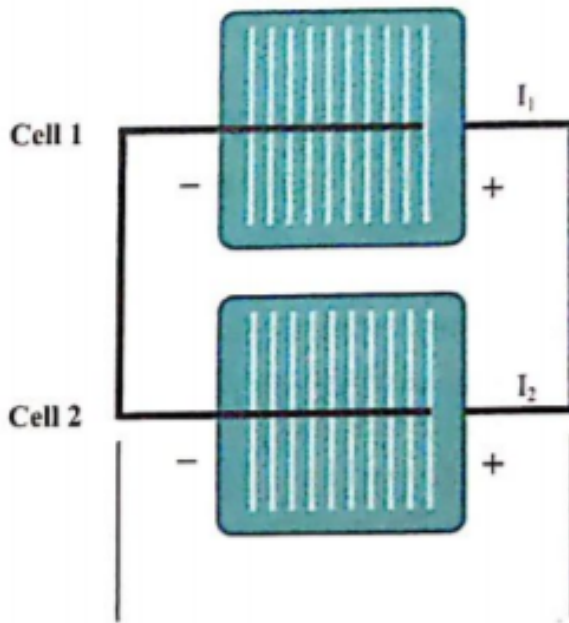


Fig. 5.19 (a)



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74. Diagram based questions:

Answer the following questions:

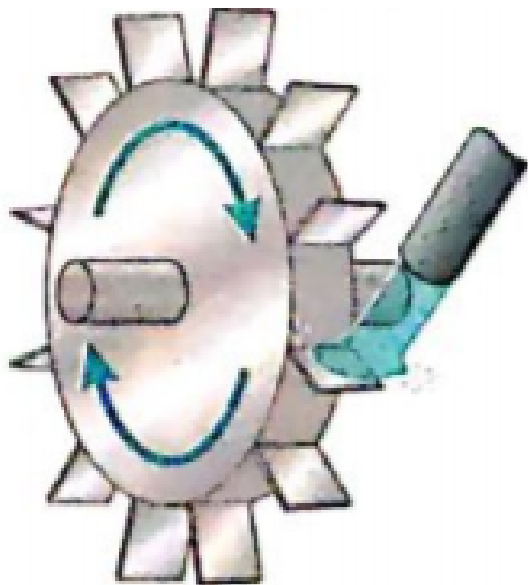


Fig. 5.20

Write the name of the device shown in the above diagram.



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75. Diagram based questions:

Answer the following questions:

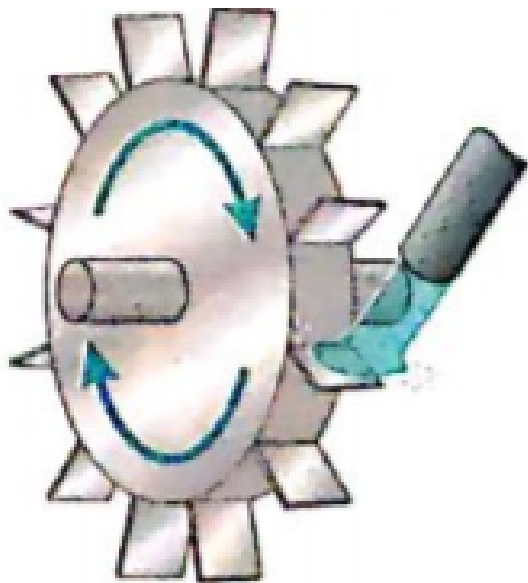


Fig. 5.20

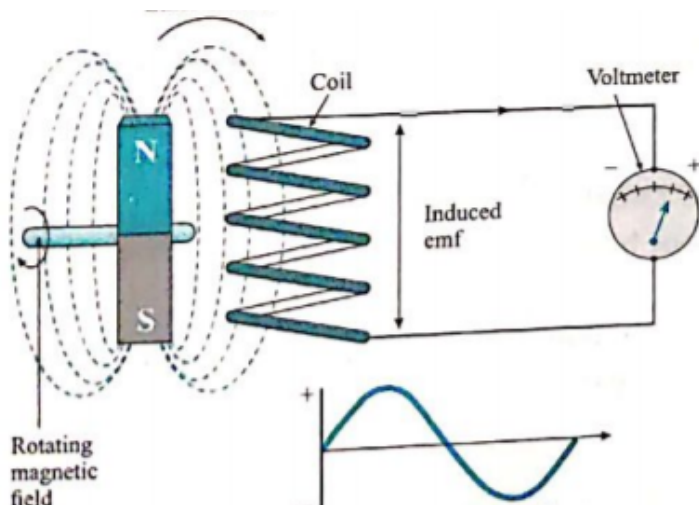
Write briefly the work of the device.



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76. Diagram based questions:

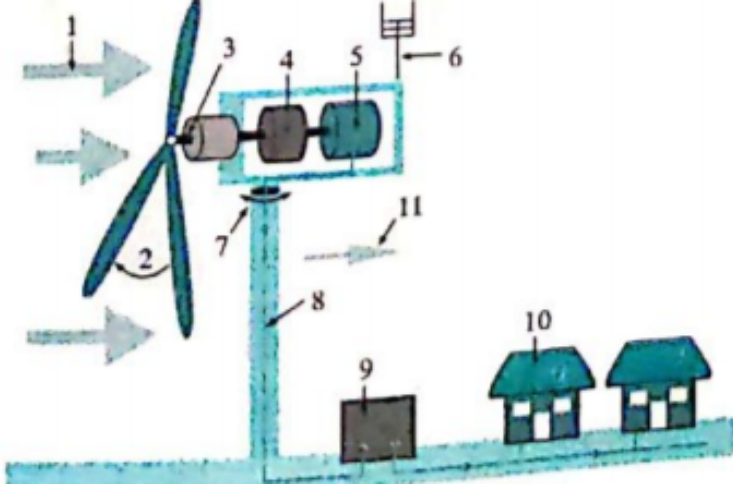
Label the given diagram of Electromagnetic induction:



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77. Diagram based questions:

Answer the questions with the help of picture.



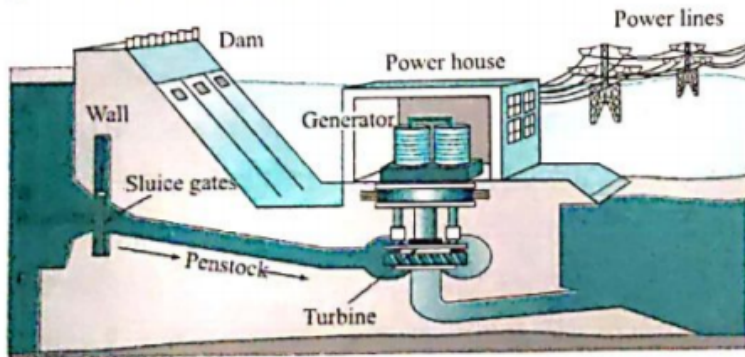
Which type of energy is produced?



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78. Diagram based questions:

Answer the questions with the help of picture.



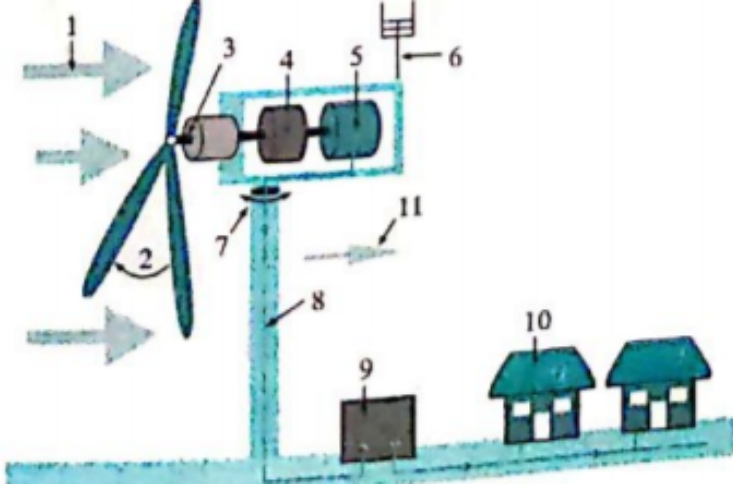
This power plant is based on which energy source?



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79. Diagram based questions:

Answer the questions with the help of picture.



Is the power plant eco friendly ? How?



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80. Diagram based questions:

Observe the figured and answer the questions given below.

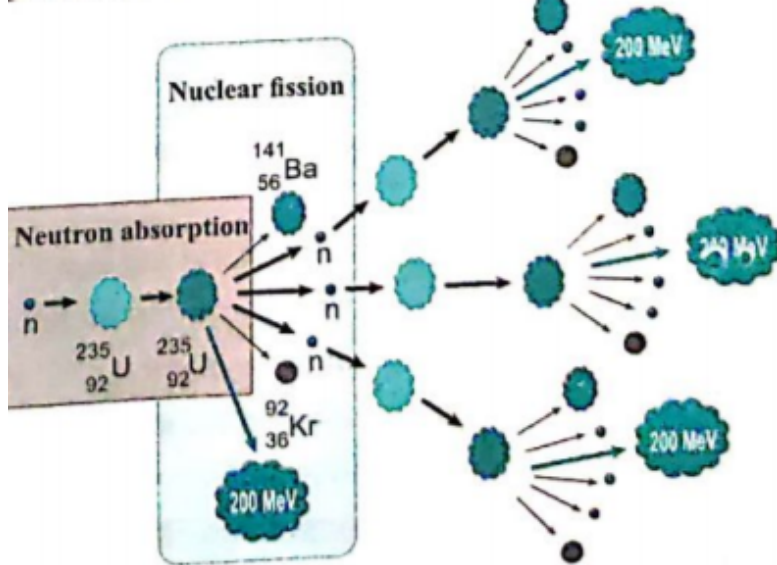


Fig. 5.24 : Nuclear fission

Name the reaction.



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81. Diagram based questions:

Observe the figured and answer the questions given below.

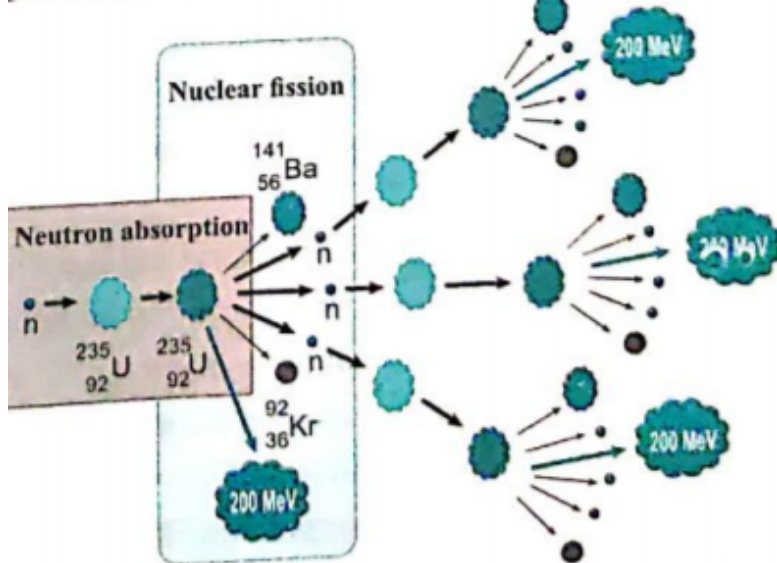


Fig. 5.24 : Nuclear fission

Where is this reaction used?



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82. Diagram based questions:

Observe the figured and answer the questions given below.

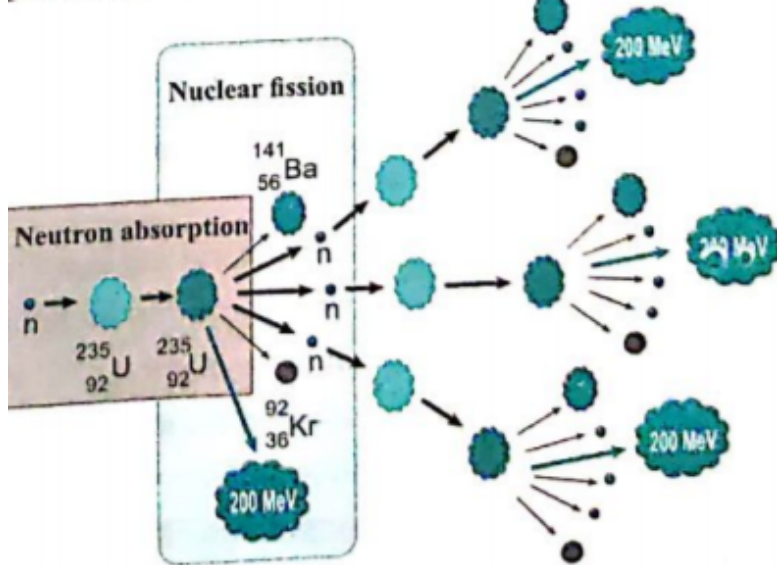


Fig. 5.24 : Nuclear fission

Which element is used in it?



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83. Diagram based questions:

Observe the figured and answer the questions given below.

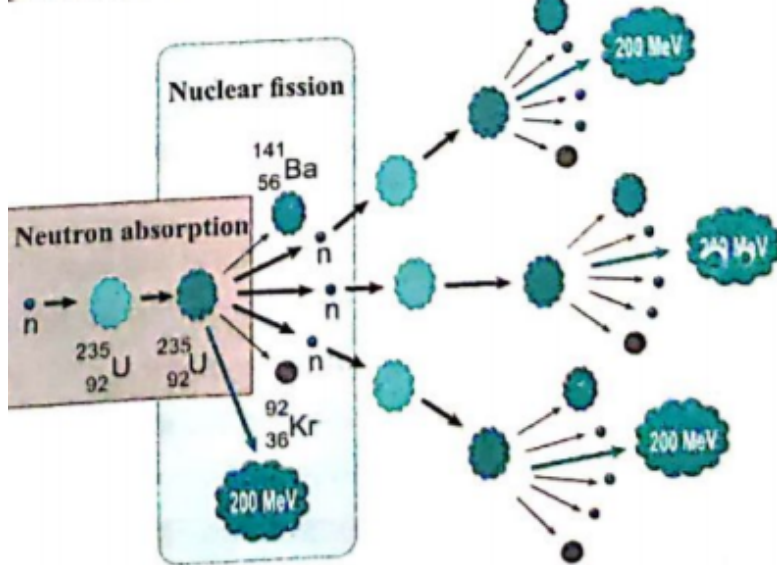


Fig. 5.24 : Nuclear fission

Identify the process shown in figure and name it.

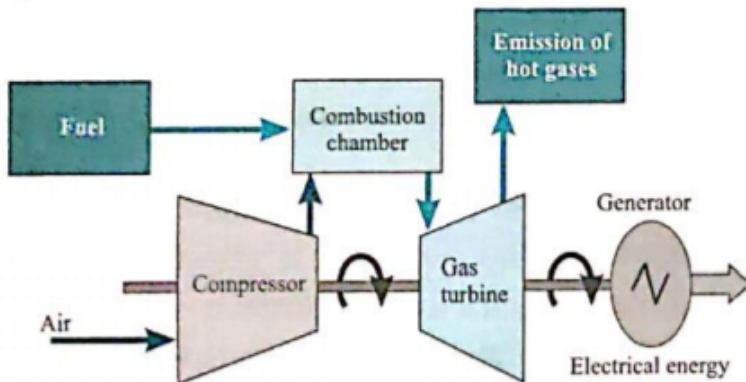


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84. Diagram based questions:

Observe the diagram and answer the

questions:



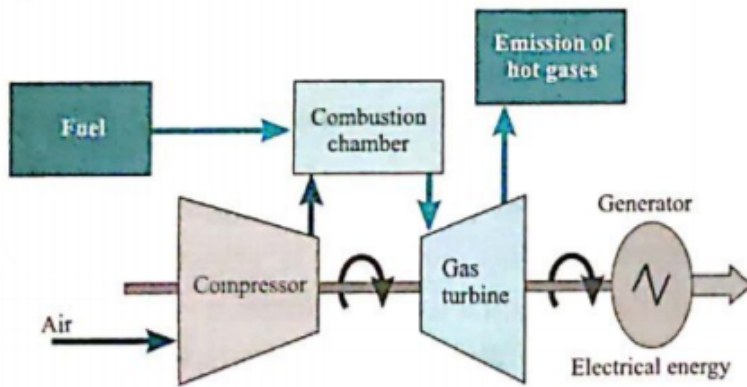
Which energy is generated from the power plant?



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85. Diagram based questions:

Observe the diagram and answer the questions:

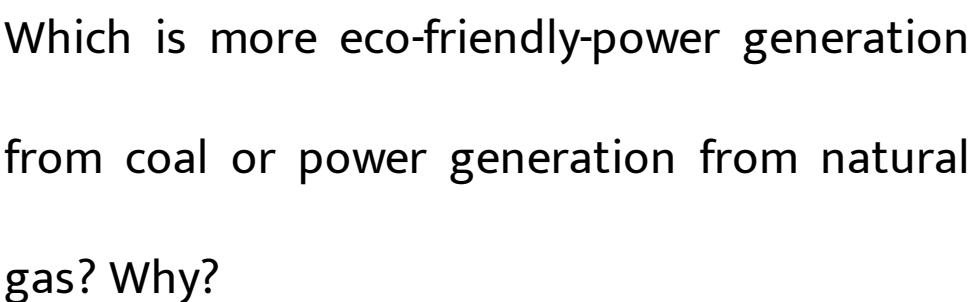


State its source.

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86. Diagram based questions:

Observe the diagram and answer the questions:



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Sketch two ways in which solar cells can be connected. Also draw the diagram to show the

arrangement of solar cells to form solar panel array.

Solar cells in series.



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88. Draw neat and labelled diagrams for the following.

Solar cells in parallel



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89. Diagram based questions:

Sketch two ways in which solar cells can be connected. Also draw the diagram to show the arrangement of solar cells to form solar panel array.

Solar cells in series.



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90. Diagram based questions:

Sketch two ways in which solar cells can be

connected. Also draw the diagram to show the arrangement of solar cells to form solar panel array.

Solar cells in series.



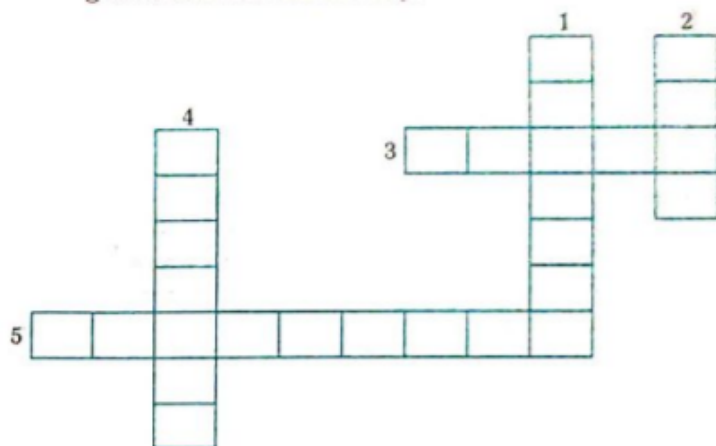
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91. Activity-based Questions :

Solve the following crossword puzzle.

Maximum energy generation in India is done

using..... energy.

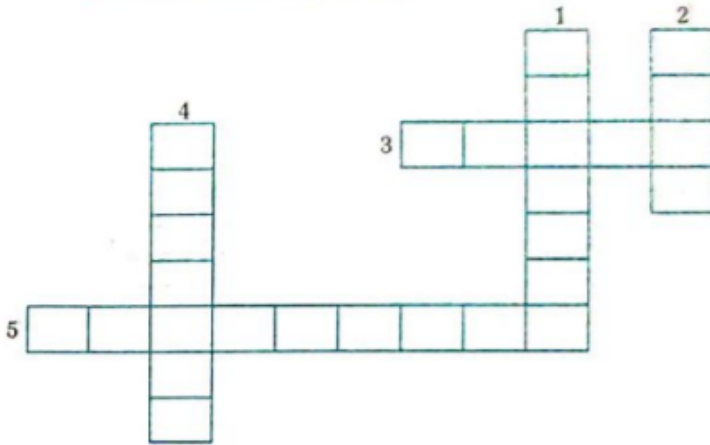


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92. Activity-based Questions :

Solve the following crossword puzzle.

..... energy is a renewable source of energy.

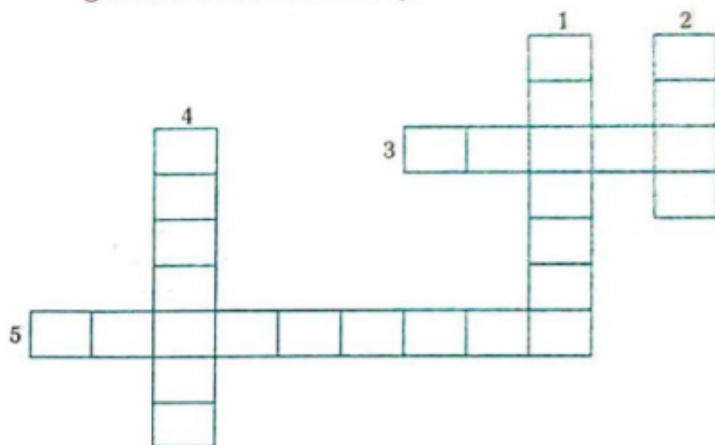


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93. Activity-based Questions :

Solve the following crossword puzzle.

Solar energy can be called energy.

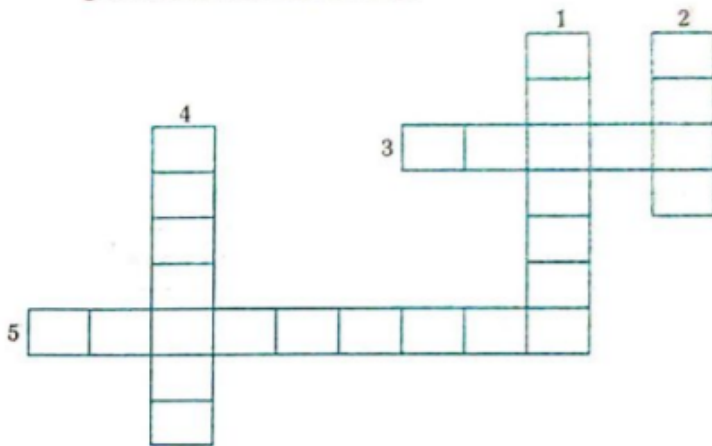


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94. Activity-based Questions :

Solve the following crossword puzzle.

..... energy of wind is used in windmills.



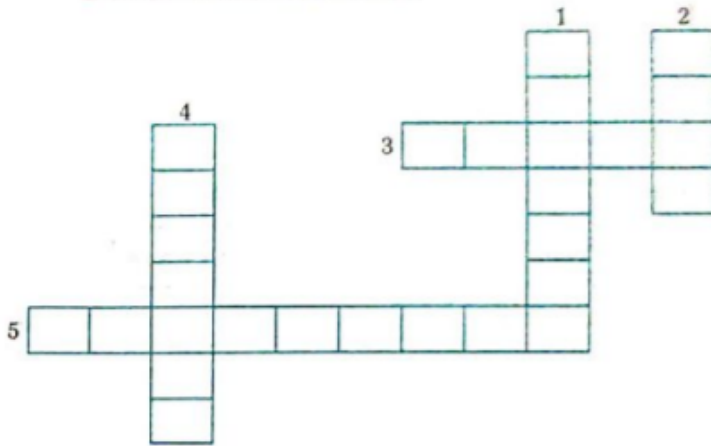
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95. Activity-based Questions :

Solve the following crossword puzzle.

..... energy of water in dams is used for

generation of electricity.



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