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Assignment - 1.

Aim :- Assignment on Non-conventional or Renewable source of energy.

1]. What is Non-conventional source of energy? Explain the different types of source of energy.

Ans. Energy generated by using wind, tides, solar, geothermal heat, and biomass including farm and animal waste as well as human excreta is known as non-conventional source of energy.

Sources :-

i) Solar energy :- Solar panels harvest the energy of the sun through using collector panels to create conditions that can be turned into a kind of power.

ii) Wind energy :- Wind power is becoming more and more common. The new innovations that are allowing wind farms to appear are making them a more common sight.

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:- Geothermal energy :- Geothermal energy is the energy that is produced from beneath the earth.

4. Hydrogen energy :- Hydrogen is available with water (H_2O) and is most common element availa - ble on earth.

5. Tidal energy :- Tidal energy uses rise and fall of tides to convert kinetic energy of incoming and outgoing tides into electrical energy.

2. What is solar energy? Explain solar thermal energy applications.

ns.

:) Solar energy is radiant light and heat from the sun that is harnessed using a range of ever - evolving technologies such as solar heating, photovoltaics, solar thermal energy.

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Applications of solar thermal energy:-

i) Generation of electricity.

ii) Heat water from outdoor or indoor pools.

iii) Underfloor heating or radiators.

iv) Heating domestic water for showering, washing dishes, washing hands, etc. These systems are used regularly to heat the water for residential use in the summer period. During the winter period this system goes on to fulfill a task of supporting the main heat system.

v) Driers of agricultural products.

vi) Industrial use, for example, in solar ovens.

vii) Desalination by solar energy.

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3). What is wind energy? How is electricity produced from wind energy? Discuss wind energy development in India.

Ans.

Wind energy :-

The energy that is generated by wind, i.e. by using windmills is known as wind energy.

construction and working of windmill to produce electricity from wind.

Construction :-

1) Rotor - It is attached with blades.
2) Controller - To control the speed of rotor.
3) Electromagnetic brake - Automatic brakes gets applied to control the damage to windmill
4) Mechanical brake :- To stop windmill mechanical brakes should be used
5) Generator :- To store electricity produced.

~~Working~~ :-

~~If the wind rotates the blades which are connected to the rotor.~~

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6) Erecting the tower :- Although the tower steel parts are manufactured off site in a factory, they are usually assemble on site.

7) Installation of control systems :-
The utility box for each turbine and the electrical communication system for the wind farmed is installed simultaneously with the placement of nacelle and blades.

Working :-

1) The area, where wind turbine is installed, the wind speed is much high in that area. The wind blow at its high velocity and hit the blades of turbine. As a result, the blades start rotating. And blades are connected to rotor, due to this both simultaneously moves or rotors start moving.

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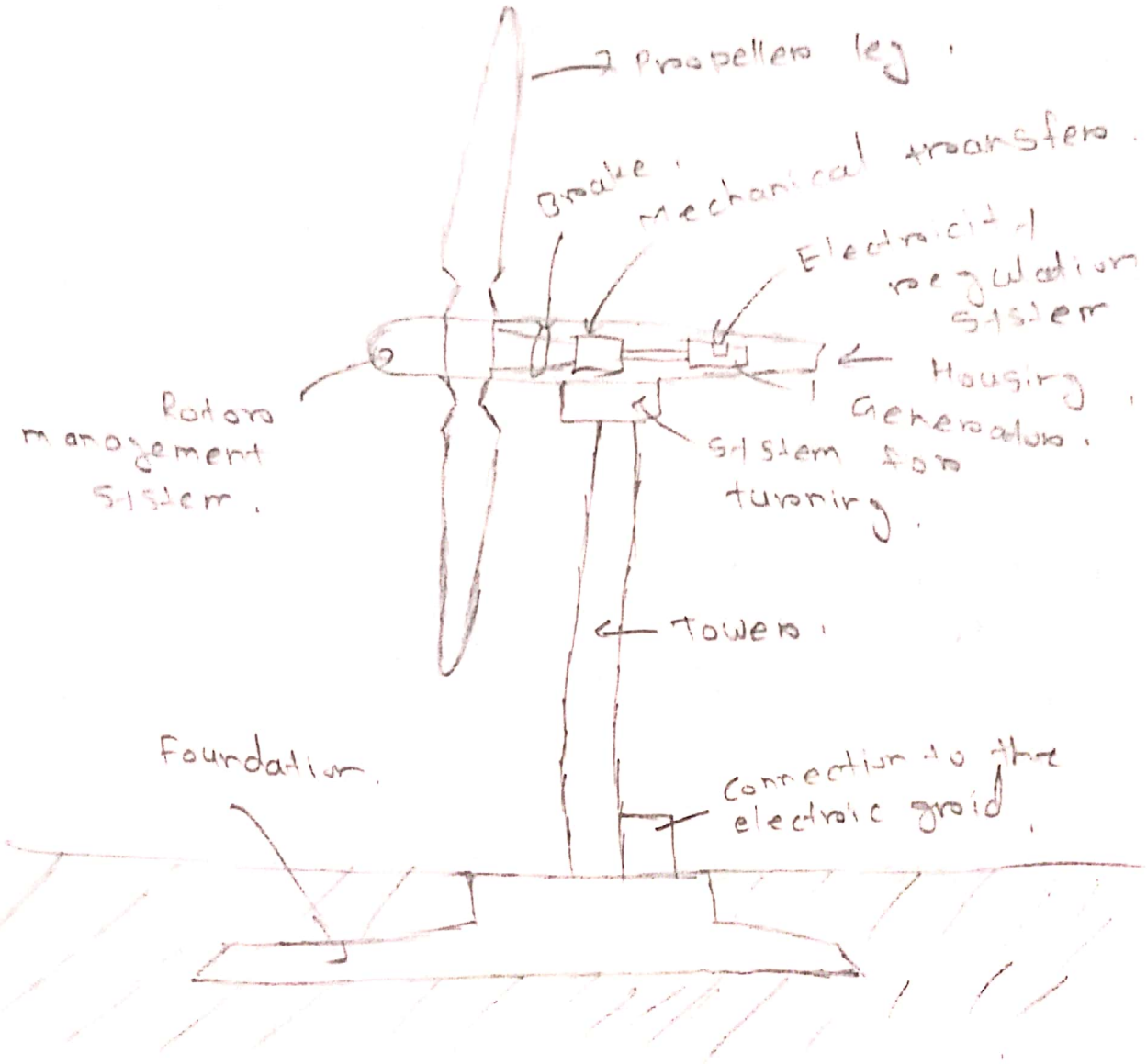

Fig. Wind turbine.

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2) The rotor is connected to the shaft.
3) The rotor will start moving as the wind starts moving the blades.
4) The controllers is used to increase the speed of rotor.
5) The gear box is then used to increases the speed of shaft which ultimately generated.
6) This energy is then stored to use it for. In this way the electricity is produced with the help of wind energy.

4) What is meant by geothermal energy? What its applications?

→ • Geothermal energy:

1) Geothermal energy is the thermal energy generated and stored in the earth.
2) Thermal energy is the energy that determines the temperature of matter.
3) The geothermal gradient, which is the difference in temperature between the core of the planet and its surface, drives the conduction of thermal energy in the form of heat from the core to the surface.
4) Earth's internal heat is thermal energy generated from radio-active decay and continual heat loss from earth's forma

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-tion.

Application of Geothermal energy :-
1) Space heating and cooling.
2) Generation of electroical power.
3) Industroial process heat.
4) Desalination of water.
5) Heavy water production.
6) Extraction of minerals from geothermal fluids.
7) Timber seasoning.

5) What is basic principle of tidal energy? which are advantages and limitation of tidal energy.

→ • Principle of tidal energy.

Tide or wave is periodic rise and fall water level of the sea. Tides occurs due to attraction of sea water by the moon. Tides contain large amount of potential energy which is used power generation.

• Advantages of tides energy.
1) To produce electroicity.
2) Cheap energy source.
3) Tidal energy has high energy density.
4) Clean source.

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3) Tidal energy has high energy density.
4) Clean source.
5) Non-polluting source of energy.
6) High efficiency.

Limitation of tidal energy.

1) It is site specific and the tidal energy can be recovered economically on the where the tidal ~~energy~~ range is 5m or more.
2) The availability of tidal energy is varying thus power generation is highly fluctuating in nature.
3) Turbine are needed which can operated with fluctuating heads.
4) The marine life and ecology is affecting region where the tide plants are located also affects the navigation system.

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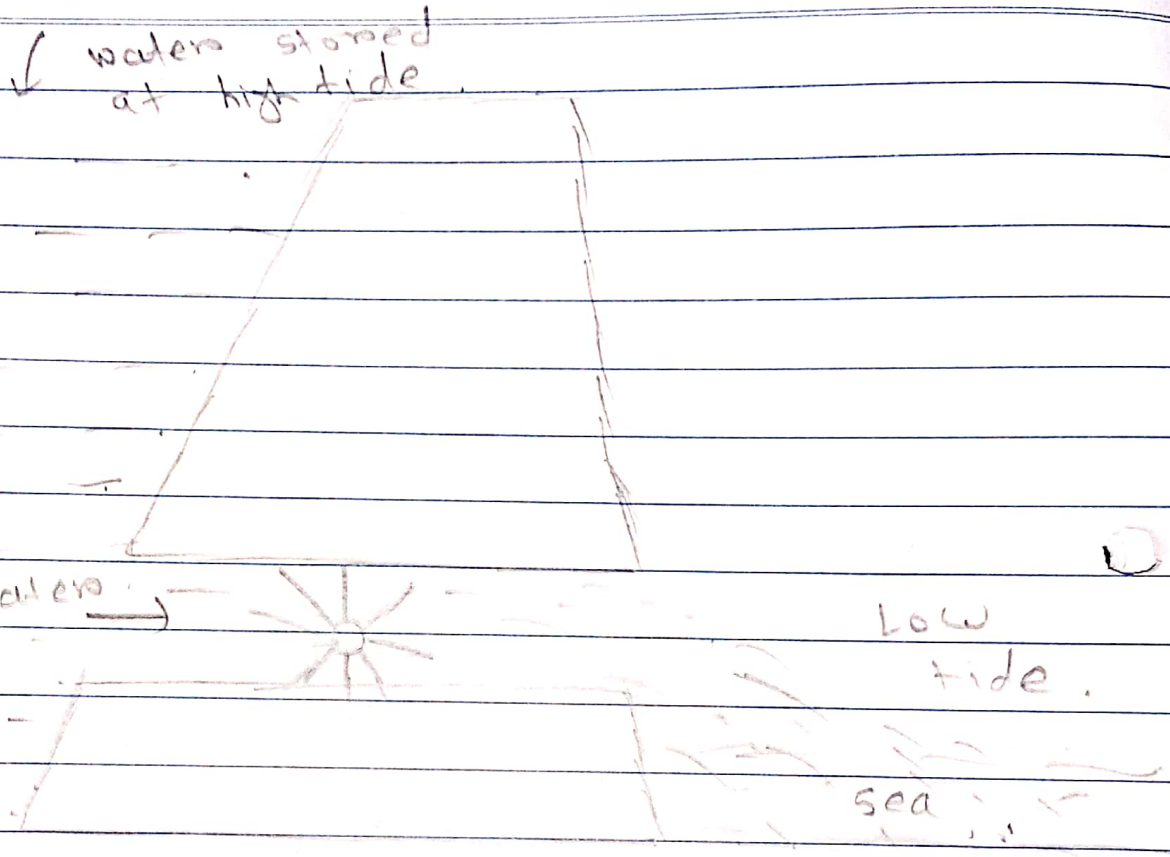

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