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SUBJECT:- PHYSICS CLASS:- XTH DATE:06/06/XX

SUBJECT TEACHER:- MR. NEEL NIRANJAN

CHAPTER 3. SOURCES OF ENERGY(SOME EXTRA QUESTIONS AND AMSWERS)

1. State two ways in which the energy of sea-waves can be harnessed.

Ans. Sea-waves energy can be harnessed by the following ways:
1. By setting up floating generators in the sea which would move up and down with the sea-waves and their movement would drive the generators to produce electricity.
2. By letting the sea-waves move up and down inside large tubes so that when the waves move up, the air in the tubes is compressed and this compressed air can then be used to turn a turbine of a generator to produce electricity.

2. What is meant by ocean thermal energy? Explain how ocean thermal energy can be used to generate electricity.

Ans. The energy available due to the difference in the temperature of water at the upper surface and the deeper layers of ocean is known as ocean thermal energy.

Ocean thermal energy is used to generate electricity in an Ocean Thermal Energy Conversion power plant (OTEC power plant). A temperature difference of 20^{o}C or more between the surface water and deeper water is needed for the operation of these plants. The warm surface water of ocean is used to boil a liquid like ammonia or chlorofluorocarbon. The high pressure of liquid vapours is used to turn the turbine of a generator and produce electricity.

3. What are the limitations of energy that can be harnessed from the sea?

Ans. Limitations of energy that can be harnessed from the sea:

1. There are very few sites around the world which are suitable for building tidal barrage for harnessing tidal energy. Moreover, the rise and fall of sea-water during high and low tides is not enough to generate electricity on a large scale.

2. The harnessing of sea-waves energy is a viable proposition only at those places where sea-waves are very strong.

3. Though the energy potential from the sea is very large but its large scale exploitation is difficult at the moment.