Question-19
Compare and contrast bio-mass and hydro electricity as sources of energy.
Solution:
The waste material of living things and the dead parts of living things is called bio-mass. Bio-mass contains carbon compounds and it is the oldest source of heat energy for domestic purposes. The important examples of bio-mass being used as a fuel are wood, cattle dung and agriculture wastes like bagasse.
Hydropower plants convert the potential energy of falling water into electricity. Water energy is a renewable source of electric energy, which will never get exhausted. The construction of dams on rivers helps in controlling floods and in irrigation.

Question-20
What are the limitations of extracting energy from
(a) the wind?
(b) waves?
(c) Tides?
Solution:
a) There are many limitations in harnessing wind energy. Wind energy farms can be established only at those places where wind blows from the greater part of a year. The wind speed should also be higher than 15 Km/h to maintain the required speed of the turbine. There should be some back-up facilities to take care of the energy needs during a period when there is no wind.
b) The waves are generated by strong winds blowing across the sea. Wave energy would be a viable proposition only where waves are very strong.
c) Tidal energy is harnessed by constructing a dam across a narrow opening, the location where such dams can be built are limited.

Question-21
On what basis would you classify energy sources as
(a) renewable and non-renewable?
(b) exhaustible and inexhaustible?
Are the options given in (a) and (b) the same?
Solution:
The options given in (a) and (b) are the same.
Those sources of energy, which are being, produced continuously in nature and are inexhaustible are called renewable sources of energy.
Those sources of energy, which have accumulated in nature over a very, very long time and cannot be quickly replaced when exhausted are called non-renewable sources of energy.

Question-22
What are the qualities of an ideal source of energy?
Solution:
The important qualities of an ideal source of energy is
a) It should be a renewable source of energy.
b) It should be pollution-free.
c) It should be economical.
d) It should be easily accessible.

Question-23
What are the advantages and disadvantages of using a solar cooker? Are there places where solar cookers would have limited utility?
Solution:
The advantages of a solar cooker
i) The use of solar cooker for cooking food saves fuel.
ii) The use of solar cooker does not produce smoke due to which the environment also does not get polluted.
iii) When food is cooked in a solar cooker, its nutrients do not get destroyed. This is because in a solar cooker, food is cooked at comparatively lower temperature.
iv) In a solar cooker, upto four food items can be cooked at the same time.
The disadvantages of a solar cooker
i) The box-type solar cooker cannot be used to make chappaties.
ii) The box-type solar cooker cannot be used for 'frying'.
The limited utility of a solar cooker is
i)The solar cooker cannot be used to cook the food during nighttime.
ii) If the day-sky is covered with clouds, even then the solar cooker cannot be used to cook the food.
iii) The direction of reflector of solar cooker has to be changed from time to time to keep it facing the sun.

Question-24
What are the environmental consequences of the increasing demand for energy? What steps would you suggest to reduce energy consumption?
Solution:
Exploiting any source of energy disturbs the environment in some way or the other. The source we would choose depends on factors such as the case of extracting energy from that source, the economics of extracting energy from the source, the efficiency of technology available and the environmental damage that will be caused by using that source.
We cannot depend on the fossil fuels for much longer, if we manage bio-mass by replacing the trees we cut down for fire-wood, we can be assured of a constant supply of energy at a particular rate. Renewable energy is available in our natural environment, in the form of some continuing or repetitive current of energy, or is stored in such large under ground reservoirs that the rate of depletion of reservoirs because of extraction of usable energy is practically negligible.

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