Name : _____ Date : _____

Some Review Questions on Renewable and Non-Renewable Energy

1. Name the form of energy or raw material described in each statement.

a) It is produced by atomic fission.
Nuclear energy

b) It is the result of the decomposition of prehistoric plants and animals.
Fossil fuels

c) It is derived from the internal heat of the Earth.
Geothermal

d) It emits more greenhouse gases than any other form of energy.
Fossil fuels

e) It leaves behind radioactive waste.
Nuclear energy

f) It is in danger of running out within the next few decades.
Fossil fuels, uranium

e) Which fossil fuel does *not* come from marine organisms?
Coal

2. In Alberta, oil is currently being extracted from oil sands. What must there have been in Alberta millions of years ago?

An ocean or body of water containing marine organisms.

3. Name two advantages and two disadvantages of wind power.

Advantages : Does not pollute the atmosphere, It is renewable.

Disadvantages : Visual pollution, noise, the generation of electricity is dependent on the wind and if there is not enough Wind. Wind energy cannot be stored.

4. Developing countries require huge amounts of energy for their economic growth. Three of these countries—China, Russia and India—are gradually turning toward nuclear energy. China has nine plants under construction and plans to build 30 more by 2030. Russia expects to build two plants every year from 2010 onward. India currently has nine nuclear plants under construction. In the meantime, these countries depend on traditional energy resources to meet their needs. For example, China is 75-percent dependent on coal for its electricity production.

According to current predictions, oil reserves will be depleted within the next 100 years, coal will run out within 200 years, and uranium, within 500 years.

a) Would these forms of energy be considered renewable or non-renewable? Explain your answer.

They are non-renewable because they are at risk of running out.

b) Burning fossil fuels creates by-products that cause environmental problems. Name one of these by-products and the problems that it may cause.

Carbon dioxide is a greenhouse gas that contributes to global warming. Other by-products Include SO_2 and NO_x (gases containing nitrogen).

c) What is the principal advantage for the world if these three developing countries use nuclear energy? Explain your answer.

With only a small amount of uranium a very large amount of energy can be produced. Also, since nuclear power does not generate greenhouse gases there would be a huge reduction in The amount of greenhouse gases being released into the atmosphere.

d) Considering the risks associated with nuclear energy, the United States—the country with the greatest number of nuclear power plants in operation—voted a moratorium at the end of the 1970s, suspending the construction of any new plants. This moratorium has now been lifted, and soon new power plants will be built. What are the two main disadvantages of using nuclear energy?

There is a risk of a nuclear accident leading to a large explosion and radioactivity getting out Into the environment is also a concern.

5. What does each of the following definitions describe?

a) a large glass panel that captures the sun's heat and transfers it to a liquid running beneath the panel surface

Solar collectors

b) a device that converts sunlight into electric current

Photovoltaic cells

6. Describe two elements of a passive heating system.

Windows can be positioned to receive more sunlight in the winter than in the summer, providing heat to the home.

Materials that absorb solar energy such as concrete can be used to build the house.

7. Name two advantages and two disadvantages of solar power.

Advantages : No greenhouse gases released, renewable, can be used to power isolated areas.

Disadvantages : costs are high, the amount of solar energy varies from one place to another.

8. How is tidal energy different from wave energy?

Both are found in the ocean, but wave energy creates electrical energy when the hydraulic energy, created by

Waves moving in and out, is used to turn a turbine.

Tidal energy makes use of a tidal barrage (dam in the ocean) which creates a lot of water pressure during times

Of high tides. The hydraulic energy of this flowing water will cause a turbine to turn under water.

9. Many of the natural energy sources seen in class are used to turn a turbine connected to a generator in order to generate electricity. How is the mechanical energy needed to turn these turbines generated for each of the energy sources listed below?

Solar Energy: Radiant energy → solar panel, electrons start moving. (No turbine to turn)

Wind Energy: Wind hits the turbine, mechanical energy is converted to electricity by the generator.

Wave Energy: Turbines connected to buoys floating in the ocean. The water causes the turbine to spin

Hydraulic Energy: - Dams with turbines underneath.
- Pressure of flowing water turns th turbine.

Tidal Energy:
- Special dams (tidal barrages) in the ocea

Burning of Fossil fuels: Releases thermal energy to boil water = steam that spins turbine

Uranium:
Split the nucleus, nuclear energy is released Contains a lot of heat, boils water = Steam that turns the turbine.