**Exercise 1**

1. **How can electricity be generated?**

Electricity can be generated by a variety of technologies that ultimately depend on the effects of solar radiation.

1. **How can windmills and waterfalls be used?**

Windmills and waterfalls (themselves very old sources of mechanical energy) can be used to turn turbines to generate electricity.

1. **Are most existing windmill installations relatively small?**

Yes, most existing windmill installations are relatively small

1. **Why are windmills usually arranged in a crisscross configuration?**

Windmills usually arranged in a crisscross configuration because that takes advantage of wind shifts.

1. **Does most electricity from hydroelectric installations come from giant dams?**

Yes, most electricity from hydroelectric installations come from giant dams

1. **Have many of the sites suitable for large dams already been used?**

Yes, many of the sites suitable for large dams have already been tapped

1. **What can you tell about the small dams in the 1970s?**

during the 1970s small dams used years earlier for mechanical energy were retrofitted to generate electricity.

1. **Are small dams used now to generate electricity?**

No, small dams are not using now to generate electricity

1. **Are large-scale hydro projects still being constructed in many developing** **countries?**

 Large-scale hydro projects are still being pursued in many developing countries

1. **What is the simplest form of solar-powered electricity generation?**

The simplest form of solar-powered electricity generation is the use of a range of collectors that heat water to produce steam to turn a turbine

1. **What is the volume of power produced annually on solar powered stations?**

Several of these facilities are in existence, producing approximately 200 megawatts of power

1. **Where are photovoltaic cells used currently?**

Photovoltaic cells, which convert sunlight directly into electricity, are currently being used for remote locations such as orbiting space satellites, unattended railroad crossings, and irrigation pumps

1. **Can you explain the principle of photovoltaic cells operation?**

The principle of photovoltaic cells operation consists in convert sunlight directly into electricity

1. **Why do you think that commercial development of still other methods seems** **far in the future?**

Commercial development of still other methods seems far in the future because progress is needed to lower costs before widespread use is possible

1. **Does ocean thermal conversion generate electricity on offshore platforms?**

Yes, ocean thermal conversion generates electricity on offshore platforms

1. **Can you explain the principle of power generation in the process of ocean** **thermal conversion?**

Ocean thermal conversion (OTC) generates electricity on offshore platforms; a turbine is turned by the power generated when cold seawater moves from great depths up to a warm surface

1. **What do you think about using space satellites to beam electricity via** **microwaves down to the earth?**

Today still highly exploratory is the notion of using space satellites to beam electricity via microwaves down to the earth.

**Exercise 2**

Разнообразные технологии - variety of technologies;  солнечная радиация - solar radiation;  ветряные мельницы и водопады – windmill and waterfall;  очень старый источник механической энергии - old source of mechanical energy;  может быть использован для вращения турбин – can be used to turn a turbine;  большинство существующих ветряных установок - most existing windmill;  конфигурация - configuration;  преимущество - advantage; гидроэнергетические установки - hydroelectric installations;  высотные плотины - giant dams;  малые плотины - small dams; цивилизованные страны - industrialized nations; механическая энергия - mechanical energy;  развивающиеся страны - developing countries;  наиболее простая форма - the simplest form; выработка солнечной энергии - solar-powered electricity generation; использование ряда коллекторов - the use of a range of collectors;  производить пар - to produce steam; несколько существующих установок - several of these facilities are in existence;  приблизительно 200 мегаватт энергии - approximately 200 megawatts of power; высокотехнологичные варианты - high-technology options;  превращать солнечный свет напрямую в электроэнергию - convert sunlight directly into electricity;  отдаленные местности - remote location; космические спутники - orbiting space satellite;  ирригационные насосы - irrigation pumps;  понижать цены - to low costs;  широкое применение – widespread use;  оффшорные платформы - offshore platforms;  морская вода - seawater; микроволны - microwaves.

**Exercise 3**

1. Windmills and waterfalls can be used c) to generate electricity.
2. Most existing windmill installations are relatively c) huge.
3. Most electricity from hydroelectric installations comes from b) giant dams
4. Many of the sites suitable for large dams have already been b) tapped
5. Large-scale hydro projects are still being constructed in b) developing countries
6. Solar-powered electricity generation is used to c) heat water
7. Solar powered facilities produce approximately b) 200 megawatts of power.
8. Photovoltaic cells are currently being used for b) remote locations

**Exercise 4**

1. Windmills and waterfalls, themselves very old sources of mechanical energy
2. Windmills and waterfalls can be used to turn turbines to generate electricity
3. Most electricity from hydroelectric installations comes from giant dams
4. Large-scale hydro projects are still being pursued in many developing countries
5. The simplest form of solar-powered electricity generation is the use of a range of collectors that heat water to produce steam to turn a turbine.
6. Photovoltaic cells converts sunlight directly into electricity
7. Photovoltaic cells are currently being used for remote locations such as orbiting space satellites
8. Ocean thermal conversion generates electricity on offshore platforms;

**Exercise 5**

1. **Электроэнергия генерируется с использованием различных технологий.**

Electricity can be generated by a variety of technologies

1. **Ветряные мельницы и водопады являются наиболее древними** **источниками выработки механической энергии.**

Windmills and waterfalls are very old sources of mechanical energy

1. **Все известные ветряные мельницы довольно небольшие по размерам.**

Most existing windmill installations are relatively small

1. **Большинство гидроэнергетических установок значительны по своим** **размерам.**

Most electricity from hydroelectric installations comes from giant dams

1. **Крупномасштабные проекты гидростанций до сих пор осуществляются в** **развивающихся странах.**

Large-scale hydro projects are still being pursued in many developing countries

1. **Наиболее простой проект генерирования солнечной энергии состоит из** **ряда коллекторов, которые нагревают воду и вырабатывают пар для** **вращения турбин.**

The simplest form of solar-powered electricity generation is the use of a range of collectors that heat water to produce steam to turn a turbine.

1. **В настоящее время работают несколько солнечных коллекторов, которые** **вырабатывают приблизительно 200 мегаватт часов электроэнергии.**

Several of these facilities are in existence, producing approximately 200 megawatts of power.

1. **Фотоэлементы с запирающим слоем превращают солнечную энергии** **напрямую в электрическую.**

Photovoltaic cells converts sunlight directly into electricity

1. **Фотоэлементы с запирающим слоем применяются на орбитальных** **спутниках.**

Photovoltaic cells are currently being used for remote locations such as orbiting space satellites