

I. Choose the correct answer from those given, for the following questions

- Identify from the following, a conventional source of energy
a. Solar energy b. tidal energy **c. natural gas** d. bio energy
- The largest installation of wind turbines in our country is in
a. Ladakh b. Gujarat **c. Kanyakumari** d. Madhya Pradesh
- Which of the following is not a feature of bio energy?
a. It improves soil quality b. it enhances water retention c. it reduces carbon dioxide content in the atmosphere **d. it increases pollution**
- Which of the following is an indirect form of solar system?
a. Tidal energy b. energy from wastes c. geothermal energy **d. electricity**

II. Fill in the blanks with suitable words

- The principle involved in the conversion of solar energy into electrical energy is called **PHOTO VOLTAIC EFFECT**
- Light energy in the form of small wave packets from the sun is called **PHOTONS**
- The conversion of crude oil from plant seeds into a useful fuel involves a process called **TRANS ESTERIFICATION**
- Plant and organic matter is also called as **VEGETABLE BIOMASS**
- The amount of energy reaching per square meter of Earth's atmosphere is called **SOLAR CONSTANT**
- Wind energy is a converted form of **SOLAR ENERGY**
- In India solar pond is established in **BHUJ, GUJARAT**
- The energy trapped within 10 km. of Earth's crust is known as **GEOTHERMAL ENERGY**
- Cow dung helps in obtaining **COOKING FUEL** and **ENRICHED MANURE**
- The reason for enormous energy output of the sun is due to **THERMONUCLEAR FUSION**

III. Answer the following questions**1. What is the need for exploring alternative sources of energy?**

Ans: as the sources of energy getting depleting by their extensive use, all over the world attempts have been made to tap alternative sources of energy

2. Differentiate between conventional and non conventional sources of energy

Ans:

Conventional sources of energy		non conventional sources of energy	
i.	These are exhaustible	i.	These are inexhaustible
ii.	Coal, petroleum, natural gas and electricity are the examples for exhaustible sources	ii.	Sun, wind, tides, geothermal, biomass and wastes

3. Mention the applications of solar energy

Ans: - conversion of solar energy into heat energy
- conversion of solar energy into electrical energy

4. Make a list of the advantages of non conventional sources of energy

Ans: advantages of non conventional sources of energy are,

- They are abundant
- Renewable
- Pollution free and
- Eco friendly

5. What is the purpose of using non conventional sources of energy?

Ans: The purposes of using non conventional sources of energy are,

- Supply of energy in a decentralized system
- Sustaining a cleaner environment

6. Differentiate between solar collectors and solar cells**Ans:**

solar collectors		solar cells	
i.	Solar collectors are used to convert light energy into heat energy	i.	solar cells are used to convert light energy into electrical energy
ii.	used in solar water heater, solar pressure cooker	ii.	used in the traffic signals in cities, lighting lamps and pumping water

7. What is bio energy?

Ans: bio energy involves plants and organic matter converted into clean fuel for energy, used to maintain unpolluted environment and reduces the carbon dioxide content in the atmosphere.

8. Name any two plants that are sources of bio fuel

Ans: Jatropha and Pongamia Pinnata (Honge) are the two plants that are sources of bio fuel

9. What is biogas?

Ans: biogas is a clean, unpolluted and inexpensive source of energy for rural areas

10. Write a brief note on geothermal energy

Ans: geothermal energy refers to heat of the earth within 10 km from the surface. it can also be processed for power. Geothermal energy has a temperature of about 1300°C .

There are about 340 hot springs identified in different parts of our country. Puga in Ladakh and Tatapani in Madhya Pradesh are most promising

11. Explain different methods of converting biomass into energy

Ans: there are three methods to convert biomass into energy, they are,

- Combustion pyrolysis:** it is a process of chemical decomposition at high temperature (as high as 5000°C) in total or partial absence of air. It yields fuel gas, ethanol and charcoal
- Bio gasification:** it is a process of anaerobic digestion of biomass to produce a combustible gas called biogas, containing methane and hydrogen
- Fermentation:** it is a process of conversion of sugars into alcohol to produce ethane and solid residual fuel

12. Mention the characteristics of Jatropha plant

Ans: Jatropha is a hardy plant which can grow on any type of soil, under any agro climatic conditions. The plant can easily propagate through seeds or stem cuttings. It grows very fast. Moreover, it is not grazed by animals even during the period of drought

13. Briefly explain about wind energy

Ans: wind energy is the kinetic energy associated with the movement of large masses of air, resulting from the differential heating of atmosphere by the sun. Hence, wind energy is a converted form of solar energy. The total potential of wind energy is very large. It varies not only from region to region but also in the same region from time to time. For the utilization of wind energy, ideally the speed of wind should be between 8 and 22 m per second. Wind turbines are used for the purpose of obtaining wind energy

14. Briefly explain about Wave energy

Ans: movement of large quantities of water up and down in the seas and oceans, in the form of waves is also a source of energy. This energy can be converted into mechanical energy and electrical energy. The tropical coastline of our country, especially the south west coast line, is found to be highly suitable for establishing energy conversion plants. Wave energy is more reliable than wind energy since the fluctuations are comparatively less pronounced