

Subject : Energy, Environment and Society
Total Marks : 50

1. State impact of technology on society?What is the definition of technology?What are the advantages of online courses?What are the advantages of online courses?

[2+2+3+3]

2. What is the definition of a 'animate energy'?What are the most pressing needs of a person?What are the effects of the changes in the atmosphere?What percentage of energy supply is expected to be from renewable sources?What are the types of needs that a person has?

[2+2+2+2+2]

3. What are the advantages of wind turbines?What is the most common type of concentrating collector?What is the principle of drying?

[2+2+2]

4. What type of collector is used for solar thermal?What is the ws angle of the sun?What is the heat loss coefficient of a collector?

[2+2+2]

5. What causes the attenuation of sunlight?What are the advantages of wind farms?What is the average of global irradiance on horizontal surface?What is a wind turbine?

[2+2+2+2]

6. What are the main ways to reduce IAP?What are the effects of cadmium on the body?What are the main components of combustion gas?

[4+3+3]

Answer Key to the questions :

State impact of technology on society?

Economic System In the modern world, superior technologies, resources, geography, and history give rise to robust economies; and in a well-functioning, robust economy, economic excess naturally flows into greater use of technology.

What is the definition of technology?

Technology is the practical use of human knowledge to extend human abilities and to satisfy human needs and wants.

What are the advantages of online courses?

Advantage of online courses is that they provide access to instructive information for students who may have difficulties learning in traditional ways. Online courses can offer a more flexible schedule, allowing students to learn at their own pace and on their own time. This can be particularly beneficial for students who have work or family obligations that make it difficult to attend traditional classes.

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What is the definition of a 'animate energy'?

Animate Energy: Energy delivered by humans and animals.

What are the most pressing needs of a person?

The needs are: Physiological Needs The survival needs for food, water, shelter etc.

What are the effects of the changes in the atmosphere?

These changes result in specific RF changes, either positive or negative and non initial radiative effects.

What percentage of energy supply is expected to be from renewable sources?

88% of total energy supply.

What are the types of needs that a person has?

They are physiological needs, safety needs, social needs, ego or esteem needs and self-actualization needs.

What are the advantages of wind turbines?

Wind turbines can be installed in remote areas, providing electricity to off-grid communities. Wind turbines have a relatively small land footprint compared to other forms of energy generation. Wind turbines can be installed in a variety of sizes, from small turbines for individual homes to large wind farms for utility-scale electricity generation.

What is the most common type of concentrating collector?

The most common type of concentrating collector is the parabolic trough system. These solar collectors use mirrored parabolic troughs to focus the sun's energy to a fluid-carrying receiver tube located at the focal point of a parabolic curved trough reflector.

What is the principle of drying?

Drying is governed by the principle that for given place, for given amount of absolute humidity, relative humidity increases with decrease in temperature and vice-versa.

What type of collector is used for solar thermal?

There are different types of collectors used for solar thermal systems, including flat plate collectors and concentrating collectors. Flat plate collectors consist of a dark plate absorber, a transparent cover that allows sunlight to pass through, heat transport fluid (e.g., air, water) to remove heat from the absorber, and a heat-insulated backing to avoid heat loss. Concentrating collectors intercept direct radiation over a large area and focus it onto a small absorber area. Examples of concentrating collectors include parabolic trough systems and parabolic collectors.

What is the ws angle of the sun?

ws is Sunset hour angle To obtain maximum solar radiation over the entire year in an area facing south(in northern hemisphere) tilt angle should be equal to the site latitude.

What is the heat loss coefficient of a collector?

The heat loss coefficient of a collector is a measure of how much heat is lost from the collector to the surrounding environment. It is represented by the symbol U and is expressed in units of watts per square meter per degree Celsius ($W/m^2\text{°C}$).

What causes the attenuation of sunlight?

The main causes of such attenuation are: Rayleigh scattering or scattering by molecules in the atmosphere.

What are the advantages of wind farms?

Large wind farms are needed to provide entire communities with enough electricity.

What is the average of global irradiance on horizontal surface?

The global irradiance on the horizontal plane of the Earth's surface for sunlight that passes through the Earth's atmosphere at 90 degrees (i.e., AM1) with clear skies is roughly $1\text{ kW}/m^2$.

What is a wind turbine?

A wind turbine is a rotating machine which converts the kinetic energy in wind into mechanical energy.

What are the main ways to reduce IAP?

Technical interventions can thus reduce IAP in three ways (Ballard-Tremeer and Mathee, 2000): • by producing less smoke: improved stoves, improved fuels and fuel switching; • by removing smoke from the indoor environment: chimneys, flues, hoods and ventilation; • by reducing exposure to smoke: reducing cooking time, behaviour, kitchen design.

What are the effects of cadmium on the body?

Effects of cadmium includes accumulation on kidney (where it damages filtering mechanisms, dysfunction), lung impairment, bone disease, human carcinogenesis, diarrhoea, stomach pains and severe vomiting reproductive failure and possibly even infertility, damage to the central nervous system, damage to the immune system.

What are the main components of combustion gas?

The largest part of most combustion gas is nitrogen (N_2), water vapor (H_2O) (except with pure carbon fuels), and carbon dioxide (CO_2) (except for fuels without carbon); these are not toxic or noxious (although carbon dioxide is a greenhouse gas that contributes to global warming).