Unit 1 solar – Part A - 16 question

Which among the following is not under electromagnetic spectrum?

- Laser light
- UV rays
- IR rays
- Visible light

A

Solar constant is

- total energy received from the sun per unit time
- total energy received from the sun per unit area
- total energy received from the sun
- total energy received from the sun per unit time per unit area

D

_____is winter and shorter day

- 21st June
- 21st December
- 21st March
- 21st September

B

Solar energy travels through space by the process of

- Conduction
- Convection
- Radiation
- Transportation

C

A typical insulation material used in a solar collector is

- Fibre glass
- Cotton
- Glass wool
- Plastic

C

Pyranometer is an instrument used for measuring the

- Temperature of solar photovoltaic cell
- Wind speed of a solar photovoltaic cell
- Efficiency of a solar photovoltaic cell
- Solar irradiance of a solar photovoltaic cell

D

A solar still is device used for

- Heating water
- Purifying water
- Cooling water
- Produce electricity

B

At the time of sunrise, zenith angle is _____

- 90°
- 0°
- 180°
- 30°

A

Solar energy cannot be stored in which of the following mediums?

- water
- iron
- gas
- wood

D

A point on the celestial sphere directly over the observer's head is

- zenith
- azimuth
- incidence
- reflection

A

Absorber plate in solar collector is made up of

- copper
- rubber
- plastic
- wool

A

A pool of saltwater which collects and stores solar thermal energy is termed as

- solar pond
- solar cooker
- solar heater
- solar dryer

A

A solar distillation is device used for

- Heating water
- Purifying water
- Cooling water
- Produce electricity

B

Which of the following system is an application of solar thermal energy?

- Internal combustion engine
- Solar lighting
- Biogas generation
- Solar water heating

D

In 'N' type silicon semiconductor material, the majority charge carriers are

- holes
- electrons
- neither holes nor electrons
- both electrons and holes

B

A single purest form of silicon crystal based solar cell is

- monocrystalline
- multicrystalline
- polycrystalline
- amorphous

A

Part B

Which one of the following statements is not true for solar energy?

- It is a dilute form of energy
- Its availability is diurnal
- Availability at any instant of time is uncertain
- Its harnessing at large scale is easy

D

The use of MPPT is

- increases the solar energy received on the module.
- sets the operating point at maximum voltage
- sets the operating voltage at maximum current
- sets the operating voltage and current for maximum power output

D

What is the standard value of solarconstant?

- 1 kW/m2
- 1.367 kW/m2
- 1.5 kW/m2
- 5 kW/m2

B

The percentage of the incoming radiation reflected back to space by the earth is:

- 10
- 20
- 30
- 40

C

On September 21, the declination angle will be:

- zero
- +23.45°
- –23.45°
- +180°

A

A horizontal surface receives:

- no reflected component of radiation.
- 50% of the reflected component of radiation.
- 50% of the diffuse component of radiation.
- 50% of the beam component of radiation.

A

A solar thermal collector is

- collects the solar energy and reflects it back
- absorbs the solar radiation and dissipate it to the ambient
- collects and coverts the solar energy into electrical energy
- collects and coverts the solar energy into thermal energy and delivers it to heat transfer fluid

D

A cylindrical parabolic concentrator requires

- 2-axes tracking
- 1-axis tracking
- no tracking
- seasonal adjustment only

B

What is the typical cooking time of a paraboloidal dish cooker?

- 2–3 hours
- 20–30 minutes
- 20–30 seconds
- 6–12 hours

B

Solar thermal water pump

- uses solar thermal energy to evaporate water
- uses solar thermal energy to circulate hot water
- uses electric powered pump to circulate water heated by solar energy
- uses solar thermal energy for production of power to drive the pump

D

The main concern in a solar pond is

- maintenance of salt gradient
- extraction of heat
- replenishment of lost water
- handling of hot brine

A

Glass cover with high iron content

- has lower conduction losses
- has higher convection losses
- is mechanically more stronger
- transmits less light through it

D

Tampered glass cover

- has lower convection losses
- transmits more light through it
- has higher thermal stress capability
- is mechanically more stronger

C

A solar cell is basically

- a voltage source, controlled by flux of radiation
- a current source, controlled by flux of radiation
- an uncontrolled current source
- an uncontrolled voltage source

B

Typical open circuit voltage of a solar cell is

- 12 V
- 6 V
- 3 V
- 0.5 V

D

Which of the following statement is not true about solar cell?

- It has no moving part.
- It is reliable and almost maintenance free.
- It is modular in design.
- It is cheap and efficient.

D