

Unit 3 - Week 1: Introduction to Solar Energy

Course outline

How does an NPTEL online course work?

Week 0 : Prerequisite

Week 1: Introduction to Solar Energy

- Lec 1: Energy Scenarios
- Lec 2: Overview of solar energy conversion devices and applications
- Lec 3: Physics of propagation of solar radiation from the sun to the earth
- Quiz : Assignment 1
- Feedback Form
- Lecture slides

Week 2: Solar Radiation Geometry

Week 3: Solar Radiation Estimation

Week 4: Fundamentals of Photovoltaic Conversion

Week 5: Standalone Photovoltaic System

Week 6: Grid connected PV system

Week 7: Fundamentals of Flat Plate Collectors

Week 8: Flat Plate Collectors

Week 9: Solar Air Heaters

Week 10: Solar Concentrating Collectors

Week 11: Thermal Energy Storage

Week 12: Applications of Solar Energy

Text Transcripts

Live Session

Assignment 1

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-09-30, 23:59 IST.

1) Which of the following form of energy is depicted as high grade energy? 1 point

- a. Mechanical
- b. Thermal
- c. Electrical
- d. All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
c. Electrical

2) A 500 kW rated power plant running at its full capacity would generate _____ kWh of electricity per year (365 days). 1 point

- a. 4,380
- b. 8,760,000
- c. 4,380,000
- d. 8,760

No, the answer is incorrect.
Score: 0

Accepted Answers:
c. 4,380,000

3) The first law of thermodynamics is 1 point

- a. Internal energy = heat added into work done
- b. Internal Energy = Heat rejected into work done
- c. Internal Energy = Heat added divided by work done
- d. Internal Energy = Heat added plus work done

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. Internal Energy = Heat added plus work done

4) The amount of electricity consumed by a 50 Watts bulb for 8 hours is 1 point

- a. 0.1 kWh
- b. 0.5 kWh
- c. 0.4 kWh
- d. 1.0 kWh

No, the answer is incorrect.
Score: 0

Accepted Answers:
c. 0.4 kWh

5) The example of indirect method of solar energy utilization is 1 point

- a. Wind energy
- b. Biomass energy
- c. Wave energy
- d. All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. All of the above

6) Which of the following solar device delivers maximum collector efficiency at STC? 1 point

- a. Flat plate collector
- b. Evacuated tube collector
- c. Line focusing collector
- d. Paraboloid dish collector

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. Paraboloid dish collector

7) When the sun is at its zenith, the value of optical air mass is 1 point

- a. Zero
- b. Unity
- c. Two
- d. Three

No, the answer is incorrect.
Score: 0

Accepted Answers:
b. Unity

8) The value of solar constant (watts per square meter) in the extraterrestrial region is 1 point

- a. 1367
- b. 1267
- c. 1167
- d. 1000

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. 1367

9) Absorption of solar radiations at earth's surface occurs due to presence of 1 point

- a. Ozone
- b. Water vapors
- c. Carbon dioxide
- d. All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. All of the above

10) The solar radiation falls at the Earth's surface includes: 1 point

1. Direct radiation that has passed through the atmosphere
2. Diffuse radiation from the sky
3. Absorbed radiation from the water

Select the correct answer using the code given below.

- a. 1 only
- b. 1 and 2
- c. 1, 2 and 3
- d. 2 and 3

No, the answer is incorrect.
Score: 0

Accepted Answers:
b. 1 and 2

11) The portion of the radiation spectrum emitted by the sun in the wavelength between 0.4 μm and 0.7 μm is called 1 point

- a. Ultra violet radiation
- b. Visible radiation
- c. Infrared radiation
- d. None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
b. Visible radiation

12) The sun subtends an angle of _____ (degree) at the earth's surface. 1 point

- a. 0.53°
- b. 23.5°
- c. 32.5°
- d. 46.5°

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. 0.53°

13) Solar collector efficiency is defined as 1 point

- a. Useful heat gain to the product of solar flux received and area of the collector
- b. Product of solar flux received and area to the useful heat gain
- c. Useful heat gain to the solar flux received
- d. Useful heat gain to area of the collector

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. Useful heat gain to the product of solar flux received and area of the collector