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Unit 9 - Week 8

Register for Certification exam

Course outline

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Week 1

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Week 8

- Radiative Properties of Particulate Media
- Combustion and Flame
- Solar and Atmospheric Radiation
- Concentrated Solar Collector
- Experimental Methods

Assignment 8

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2019-03-27, 23:59 IST**

1) Which of the following equipments is not used as a monochromator in experimental radiative heat transfer? **1 point**

- Slit
- Grating
- Blackbody cavity
- Prism

No, the answer is incorrect.

Score: 0

Accepted Answers:

Blackbody cavity

2) Which of the following instruments is used to measure the Global Horizontal Solar irradiance? **1 point**

- Infrared camera
- Pyranometer
- Skyradiometer
- Pyrheliometer

No, the answer is incorrect.

Score: 0

Accepted Answers:

Pyranometer

3) Which of the following solar energy technology works on highest concentration ratio? **1 point**

- Fresnel Reflector Concentrator
- Parabolic trough Concentrator

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4) The amount of solar energy is highest in which of the following spectral regions?

1 point

- Ultraviolet
- Visible
- Infrared
- Microwave

No, the answer is incorrect.

Score: 0

Accepted Answers:

Infrared



5) Which of the following factors is responsible for the Greenhouse effect?

1 point

- Higher absorption of solar energy in visible spectrum
- Higher absorption of solar energy in Infrared spectrum
- Higher absorption of earth radiation in visible spectrum
- Higher absorption of earth radiation in Infrared spectrum

No, the answer is incorrect.

Score: 0

Accepted Answers:

Higher absorption of earth radiation in Infrared spectrum



6) Which of the following substances provide luminosity to a flame?

1 point

- Soot particles
- Ash particles
- CO₂ gas
- Radicals of various hydrocarbons

No, the answer is incorrect.

Score: 0

Accepted Answers:

Soot particles

7) The scattering phase function for a single very small sphere ($x \sim 0.001$) shows

1 point

- Nearly isotropic scattering
- Strong forward scattering
- Strong backward scattering
- Strong forward and backward scattering

No, the answer is incorrect.

Score: 0

Accepted Answers:

Nearly isotropic scattering

8) Which of the following types of scattering phenomena leads to change in the wavelength of radiation

1 point

- Raman scattering
- Mie scattering
- Rayleigh scattering
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Raman scattering

9) A laser beam ($\lambda=0.6 \mu\text{m}$) is shot in the sky. At 1 km altitude the laser encounters a 200 m **1 point** thick cloud of tiny water droplets ($1 \text{ nm} \leq a \leq 20 \text{ nm}$), where a is the diameter of the water droplets. Assuming uniform particle distribution of $n=6 \times 10^{15} \text{ (nm}^{-1}\text{-m}^{-3}\text{)}$, and Rayleigh theory to be valid, the volume fraction of water vapor in the cloud is

- $2 \times 10^{-4} \%$
- $10^{-4} \%$
- $5 \times 10^{-4} \%$
- $10^{-5} \%$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$10^{-4} \%$

10) In the above problem if the complex index of refraction of water vapor at $\lambda=0.6 \mu\text{m}$ is $m = (1.35 \times 10^{-7} i)$, then the spectral absorption coefficient of the cloud in per cm is **1 point**

- 0.000001741
- 0.0001741
- 0.000536
- 0.00536

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.0001741



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