

Unit 5 - Week 4

Course outline

How does an NPTEL online course work?

Week 1

Week 2

Week 3

Week 4

Hypsometric Equation

Atmospheric Thermodynamics

Thermodynamics - Dry Air

Thermodynamics - Moist Air

Geopotential and Scale Height

Quiz : Assignment 4

Assignment 4 solution

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

DOWNLOAD VIDEOS

FEEDBACK

Assignment 4

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

Due on 2020-02-26, 23:59 IST.

1) What is the pressure exerted by water vapor at 273 K having density 4.77 g/m^3 ?

1 point

- 4.65 hPa
 10.5 hPa
 6.01 hPa
 8.7 hPa

No, the answer is incorrect.
Score: 0

Accepted Answers:
6.01 hPa

2) The atmospheric gases are considered to obey

1 point

- Boyle's law
 Charles' law
 Ideal gas equation
 Ohm's law

No, the answer is incorrect.
Score: 0

Accepted Answers:
Boyle's law
Charles' law
Ideal gas equation

3) If Oxygen and Nitrogen contains approximately 79 % and 21 % masses of atmosphere, the mean molecular mass is (g/ mol)

1 point

- 27.89
 30
 28.77
 29.25

No, the answer is incorrect.
Score: 0

Accepted Answers:
28.77

4) A parcel of moist air has a total pressure of 975 hPa and a temperature of 15 °C. If the mixing ratio is 1.80 g/kg and vapor pressure is 724.425 hPa, what is the virtual temperature of the parcel ?

1 point

- 105.07 °C
 127.615 °C
 147.245 °C
 97.215 °C

No, the answer is incorrect.
Score: 0

Accepted Answers:
127.615 °C

5) The ratio of specific gas constants for dry and moist air is

1 point

- 0.452
 0.844
 0.622
 0.266

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.622

6) The virtual temperature primarily depends on

1 point

- moisture concentration
 dry air temperature
 dry air concentration
 dry air partial pressure

No, the answer is incorrect.
Score: 0

Accepted Answers:
moisture concentration

7) The geopotential at a particular point in the atmosphere mainly depends on

1 point

- pressure
 temperature
 height
 time

No, the answer is incorrect.
Score: 0

Accepted Answers:
height

8) If the pressure at sea level is 1014 hPa and scale height is 8 km, what is the geopotential height (above sea level) at 1000 hPa ? (Hint: if $x \ll 1$, $\ln(1+x) \approx x$)

1 point

- 14 m
 86 m
 45 m
 112 m

No, the answer is incorrect.
Score: 0

Accepted Answers:
112 m

9) The atmosphere of the Venus consist of 95% CO_2 and 5% N_2 by mass. Calculate its apparent molecular weight (g/mol).

1 point

- 52.67
 42.79
 28.25
 35.33

No, the answer is incorrect.
Score: 0

Accepted Answers:
42.79

10) If the virtual temperature between the 1000 hPa and 500 hPa pressure surfaces is 15 degree C, what is the approximate thickness of the layer ? (Use $\ln(2) = 0.6931$)

1 point

- 5846 m
 585 m
 3485 m
 1014 m

No, the answer is incorrect.
Score: 0

Accepted Answers:
5846 m