

Unit 11 - Week 10

Course outline

How does an NPTEL online course work?

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

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Week 9

Week 10

Chapman's Alpha Layer

Hydrogen in Ionosphere

Debye's Shielding

Debye's Shielding and Debye's Potential

Debye's Potential-Continued

Quiz : Assignment 10

Assignment 10 Solution

Week 11

Week 12

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FEEDBACK

Assignment 10

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

Due on 2020-04-08, 23:59 IST.

1) The height of peak production doesn't depend on

1 point

- absorption cross-section of atoms.
- the intensity of the solar radiation.
- the solar zenith angle.
- the concentration of atmosphere.

No, the answer is incorrect.
Score: 0

Accepted Answers:
the intensity of the solar radiation.

2) In laser fusion, the core of a small pellet of DT is compressed to a density of $10^{33} \text{ (m}^{-3}\text{)}$ at a temperature of 50,000,000 K. Estimate the number of particles in a Debye sphere in this plasma.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 15.1,15.4

0 points

3) Calculate plasma frequency in E-layer of the ionosphere in the unit of 10^5 Hz .

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 9.0,10.0

0 points

4) Which one of following is true -

1 point

- solar zenith angle effect the height at which rate of production of ions is maximum in ionosphere.
- at 90° solar zenith angle the rate of production of ions is maximum at heigher altitude.
- rate of production of ions in ionosphere does not depend on concentration of atmosphere.
- solar zenith angle does not effect the height at which rate of production of ions is maximum in ionosphere.

No, the answer is incorrect.
Score: 0

Accepted Answers:
solar zenith angle effect the height at which rate of production of ions is maximum in ionosphere.

5) The concentration of H-atom _____ with height.

1 point

- depends on concentration another constituents
- decreases
- increases
- remains constant

No, the answer is incorrect.
Score: 0

Accepted Answers:
increases

6) _____ affect the appearance and disappearance of F1 layer in ionosphere

1 point

- Temperature
- Amount of ionization
- Neutral density
- Pressure

No, the answer is incorrect.
Score: 0

Accepted Answers:
Temperature
Amount of ionization

7) Based on Saha equation, the correct statement(s) is/are

1 point

- amount of ionization increases with temperature.
- amount of ionization depends on the type of atom or molecules to be ionized.
- amount of ionization does not depend on the concentration of ions.
- amount of ionization depend on the concentration of neutrals.

No, the answer is incorrect.
Score: 0

Accepted Answers:
amount of ionization increases with temperature.
amount of ionization depends on the type of atom or molecules to be ionized.
amount of ionization depend on the concentration of neutrals.

8) Which one of these is false

1 point

- In plasma electron and ion have different temperature.
- Kinetic energy of ions effects the Debye length.
- Electron temperature is smaller than ion temperature.
- Plasma is quasi-neutral.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Electron temperature is smaller than ion temperature.

9) A distant galaxy contains a cloud of protons and anti-protons, each with density $n = 10^6 \text{ m}^{-3}$ and temperature 100 K. What is the Debye length? 1 point

- 0.0023 m
- 0.4879 m
- 0.0164 m
- 0.2312 m

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.4879 m

10) Which of these is/are correct statement(s) in case of the ionosphere

1 point

- In D-region neutrals control motion the plasma.
- In E-region electron controls the motion of plasma.
- In F-region ions and electron both controls the motion of plasma.
- In ionosphere neutrals control the plasma.

No, the answer is incorrect.
Score: 0

Accepted Answers:
In D-region neutrals control motion the plasma.
In E-region electron controls the motion of plasma.
In F-region ions and electron both controls the motion of plasma.