

Ozone Chemistry Questions with Solutions

Q1. Which of the following is not the consequence of ozone layer depletion?

- a.) Increased ultraviolet rays
- b.) Malignant melanoma-Another form of skin cancer
- c.) Cyanobacteria are sensitive to UV radiation and would be affected by its increase.
- d.) None of these

Correct Answer– (c.) Cyanobacteria are sensitive to UV radiation and would be affected by its increase.

Q2. Ozone depletion is found in which sphere?

- a.) Ionosphere
- b.) Stratosphere
- c.) Lithosphere
- d.) None of these

Correct Answer– (b.) Stratosphere

Q3. Which of the following gas does not affect the ozone layer-

- a.) Cl_2
- b.) CH_2Cl
- c.) NO
- d.) CFCl_3

Correct Answer– (a.) Cl_2

Q4. The importance of the ozone layer is because-

- a.) It reduces light reflection
- b.) It provides oxygen to jet fliers
- c.) It absorbs extra light rays
- d.) It filters out ultra-violet radiations

Correct Answer– (d.) It filters out ultra-violet radiations

Q5. The formula of ozone is-

- a.) O_2

- b.) [O]
- c.) O₃
- d.) None of the above

Correct Answer– (c.) O₃

Q6. How are hydrofluorocarbons produced?

Answer. HFC, any of several organic compounds composed of hydrogen, fluorine, and carbon. HFCs are manufactured synthetically and are primarily used as refrigerants.

Q7. Do chlorofluorocarbons or hydrofluorocarbons affect the ozone more?

Answer. HCFCs contain chlorine atoms, but they are less harmful to the ozone layer because they also contain hydrogen atoms, which causes them to degrade faster in the atmosphere.

Q8. What elements cause ground-level ozone?

Answer. Ground-level ozone is a colourless, irritant gas that forms just above the earth's surface. It's referred to as a "secondary" pollutant because it's created when two primary pollutants react in sunlight and stagnant air. Nitrogen oxides (NO_x) and volatile organic compounds (VOCs) are the two primary pollutants.

Q9. How does the ozone impact the climate system?

Answer. The primary effect of ozone on climate is temperature change. The more ozone there is in a given mass of air, the more heat it holds. Ozone generates heat in the stratosphere by absorbing ultraviolet radiation from the sun as well as upwelling infrared radiation from the lower atmosphere (troposphere).

Q10. What pollutant does not destroy stratospheric ozone?

Answer. Many pollutants, such as hydrogen sulphide gas, nitrate gases, sulphate gases, carbon dioxide, and methane, do not deplete stratospheric ozone.

Q11. What is ozone layer depletion? How does it occur?

Answer. The thinning of the ozone layer present in the upper atmosphere is called ozone layer depletion. Some chemical compounds release chlorine and bromine, which in exposure to high ultraviolet light causes the depletion of ozone.

Q12. How does the ozone layer help?

Answer. The stratospheric ozone layer absorbs some of the sun's radiation, preventing it from reaching the planet's surface. Most importantly, it absorbs the UVB portion of UV light. UVB is a type of ultraviolet light emitted by the sun (and sun lamps) that has a number of negative effects.

Q13. What is the composition of the ozone layer?

Answer. The ozone layer, also known as the stratosphere, is made up of ozone gas (90 % of the total ozone in the atmosphere). Ozone is made up of three oxygen atoms and is created by the action of ultraviolet (UV) radiation on oxygen molecules, which are made up of two oxygen atoms.

Q14. Why is ozone higher than oxygen?

Answer. Ozone is constantly being created in the upper reaches of the atmosphere as a result of all that sunlight slamming into and breaking apart oxygen molecules. That is why the ozone concentration is higher in space than on Earth.

Q15. Write a short note on the enhancement of the ozone hole?

Answer. The depletion of the ozone layer causes the ozone layer to enhance and that is creating an Ozone hole.

- UV rays are reaching the earth and causing harm due to ozone depletion caused by the presence of CFC gas.
- UV rays are extremely harmful to living organisms because DNA and proteins preferentially absorb UV rays, and their high energy breaks chemical bonds within these molecules. UV-B can cause DNA damage and mutation. It causes skin ageing, skin cell damage, and various types of skin cancer.
- The cornea in the human eye absorbs UV-B radiation, and a high dose of UV-B causes corneal inflammation, which is known as snow blindness, cataract, and so on. Such exposure has the potential to permanently damage the cornea.

Practise Questions on Ozone Ozone

Q1. Ozone layer depletion is caused by-

- a.) Carbon dioxide
- b.) Nitrous oxide
- c.) Methane
- d.) Chlorofluorocarbon

Correct Answer– (d.) Chlorofluorocarbon

Explanation– Chlorofluorocarbons can be found in ACs and Refrigerators.

Q2. The gas that absorbs the most harmful UV rays in the stratosphere is–

- a.) Ozone
- b.) Water vapour
- c.) Nitrous oxide
- d.) Carbon dioxide

Correct Answer– (a.) Ozone

Q3. Name the gases that are harmful to the ozone layer.

Answer. Some harmful gases to the ozone layer are carbon tetrachloride (CCl_4), chlorofluorocarbons (CFC), and CO_2 .

Q4. What is an ozone hole?

Answer. An ozone hole is a depletion of the ozone layer in the stratosphere, which is located about 26-30 kilometres above the Earth's surface. It is caused by chlorofluorocarbons (CFCs), which are found in air conditioners, aerosol spray cans, refrigerants, and other products. CFCs cannot be removed in the troposphere and migrate to the stratosphere, where they react with ozone, releasing free chlorine atoms and depleting the ozone layer.

Q5. The formation of the ozone hole is maximum over which place?

Answer. The formation of the ozone hole is maximum over Antarctica.