Indian Institute of Technology - Bhilai

CYL101/IC201 Environmental Studies

Name: ID number:

Mid-sem Exam (2025-26) Total marks: 50 marks

Total number of questions: 18

Fill in the banks. Each blank carries 1 mark.

1. The atmospheric layer where most weather phenomena occur is called the Troposphere.
2. The gas primarily responsible for absorbing harmful ultraviolet radiation is ozone.
3. The splitting of a molecule into fragments by absorption of light is called Radical formation.
4. Particulate matter smaller than 2.5 micrometers is called Smog.
5. Acid rain is mainly caused by the oxides of Nitrogen and Sulphur.
6. Carbon monoxide is toxic because it binds to ~~Haemoglobin~~ Haemoglobin in human blood more strongly than oxygen. (Iron)
7. The international treaty signed in 1987 to phase out CFCs is called the Montreal Protocol.
8. The 2015 international agreement aiming to limit global warming to below 2 °C is known as the Paris Agreement accord.
9. The four main greenhouse gases are Carbon dioxide, Water vapour, Ozone, Methane.
10. In a food chain of grassland ecosystem, the top consumers are ~~Eagles~~ Carnivores.

Answer the following questions.

11. Explain why the ozone layer is important for life on Earth. (3 marks)
12. Why is carbon monoxide (CO) considered more dangerous than carbon dioxide (CO_2) for human health? (3 marks)
13. What is the greenhouse effect? Mention two major greenhouse gases responsible for it along with the reasons. (5 marks)
14. State the difference between persistent organic pollutants and biodegradable pollutants. Give one example each. (3 marks)
15. Why does temperature decrease with height in the troposphere but increase in the stratosphere? (3 marks)

16. Explain the Chapman cycle of ozone formation and destruction in the stratosphere. Discuss the role of chlorofluorocarbons (CFCs) in ozone depletion with relevant chemical equations. What are the environmental and health consequences of ozone depletion? (10 marks)

17. The EPA maximum contaminant level (MCL) for nitrate in drinking water is 10 ppm (as nitrogen). A river sample has 50 ppm nitrate (NO_3^-). Express the concentration in millimolar (mM). Compare with the EPA standard. (5 marks)

18. A river contains 20 ppb of lead, while an industrial effluent contains 500 ppb of lead. If 200 L of river water mixes with 50 L of effluent, what will be the final lead concentration (in ppb)? Compare this value with the EPA limit of 15 ppb and state by what factor it is higher or lower. (8 marks)