gramme Name & Branch : B.Tech & Civil Engineering

urse Code : BCLE214L
ourse Name : Global Warming
aculty Name(s) : Dr. S Murugavelh, Dr. Vaani N & Dr.Kavitha M S
Class Number(s) : VL2024250503727,4589,3726
am Duration : 90 minutes Maximum Marks

neral instruction(s): Answer all the questions

he use of calculators is permitted

Q. No	Question	Marks	Course Outcome (CO)
1.	Ozone plays a dual role in the earth's atmosphere, acting both as a global warming inhibitor and inducer- Explain the context of this statement with the underlying physical processes	10	1
2.	Explain the concept of feedback mechanisms of climate change. How do positive and negative feedback loops influence the climate system	10	1
3.	An air parcel with a mass of 10 kg undergoes isobaric heating, absorbing 400,000 J of energy. The air behaves as an ideal gas. The initial temperature, pressure and volume are 15 °C, 101,325 Pa, and 6.5 m^3 respectively. The gas constant for air is R=287 J/kg. K, and the specific heat capacity of air at constant pressure is c_p =1005 J/kg. K. Calculate the final temperature of the air parcel after heating, the final volume of the air parcel. Analyse the work done by the air parcel and the entropy change during this process with respect to the first law of thermodynamics	10	5
4.	A region on Earth's surface emits longwave terrestrial radiation at a temperature of 288 K. The surface emissivity (ε) is 0.90, and the Stefan-Boltzmann constant (σ) is 5.67×10^{-8} W/m^2 K. Assume that 60% of this radiation is absorbed by greenhouse gases in the atmosphere, and the rest escapes directly to space. Evaluate the total terrestrial radiation emitted by the surface and determine the radiation absorbed by the atmosphere. If the atmosphere re-emits the absorbed energy equally in all directions, how much radiation is returned to the Earth surface?	10	5
5.	Draw the global carbon emission chart by various energy sectors. Discuss the causes of emission in every sector	10	2

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