

Indian Institute of Science Education and Research Kolkata

Earth System Process (ES1201, Spring 2022)

Assignment-1

Note: Please submit the scanned copy of the worked-out assignment. You are free to discuss among yourselves. However, any attempt to copy blindly will result into zero marks for everyone involved. You need to write answers based on your own understanding. Do not simply copy and paste from the internet and books.

1. Explain the thermal variation of the atmosphere as a function of altitude.
2. Identify two physical processes by which gases can absorb infrared radiation. Give examples of each process.
3. Given that a 300-K blackbody radiates its peak energy at the wavelength of about $10\ \mu\text{m}$, at what wavelength would a 900-K blackbody radiate its peak energy?
4. Explain the formation of Hadley cells and if they are affected by seasonal variations.
5. Briefly explain the formation of jet streams.