

ASL410: Numerical Simulation of Atmospheric and Oceanic Phenomena

Minor Examination, 2015 February

Time: 1 Hour

Please put your serial number on **the front page** of the answer sheet.

Answer the questions in 3-4 sentences (Any extra explanation beyond 4 lines will not be evaluated).

1. How does temperature vary with altitude in the troposphere? Why does it vary so ?
{2.5 Marks}
2. How does specific humidity vary with altitude ? Why does it vary so ?
{2.5 Marks}
3. Why does salinity minimum occur over the equator ?
{2.5 Marks}
4. Why does evaporation minimum occur over the equator ?
{2.5 Marks}
5. Over the polar region, why salinity is lesser (relative to the deeper ocean) at the ocean surface ?
{2.5 Marks}
6. How climate change is different from climate variability? What are the reasons behind climate variability
{2.5 Marks}
7. Between the tropical and polar tropopause, which one is present at lower height ? Why is it so ?
{2.5 Marks}
8. Why environmental lapse rate is lesser than the dry adiabatic lapse rate ?
{2.5 Marks}
9. Air motion (generally) follows the adiabatic process in the atmosphere; why is it so (why not isothermal/ isobaric) ?
{2.5 Marks}
10. In the atmosphere, pressure gradient force in the vertical direction is much greater than that in the horizontal direction, however wind speed in the vertical direction is far less than that in the horizontal direction; how is it possible ?
{2.5 Marks}