

Major Examination – ASL761
1st Semester 2017 – 2018
Maximum Time: 2.0 hours, Total Marks: 40

Answer ALL Questions

- ~~1.1~~ Explain with example what do you mean by uncertainty in climate change projections? (2)
- ~~1.2~~ What are the major approaches for quantifying uncertainties in global warming projections from climate models? (3)
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- ~~2.1~~ Write the formula for computing entraining CAPE and explain the various terms involved. (2)
- ~~2.2~~ Write the updraft mass flux equation for a cloud and explain the various terms involved. (2)
- ~~2.3~~ How does entrainment affect the buoyancy of a cloud if the Relative Humidity of the environment is: a) low, b) high? (3)
3. Write the conservation equation used in a one-dimensional entraining plume model. Explain the various terms used in the equation. Name the conserved variables. (5)
- ~~4.1~~ Write with equation what do you mean by column water vapor (CWV). (2)
- 4.2 Write with equation how to compute saturation CWV. (2)
5. Say, there are two temperature profiles having the same mass-weighted vertically averaged tropospheric temperature, can the saturation CWV be different for the two profiles? Explain. (3)
- ~~6.~~ Explain the following: a) Downdraft fraction, b) Deep convective adjustment time. (3)
- ~~7.~~ Does bias correction lead to model improvement? Explain. Briefly explain the quantile based bias correction technique. (2+2)
- ~~8.~~ Design a set of numerical experiments to assess the uncertainty in the climate change signal of rainfall due to parameter sensitivity. (5)
- ~~9.~~ Explain the criteria for hatching and stippling shown in the IPCC AR5 figure below. (4)

