

ASL360 - The Earth's Atmosphere: Physical Principles

Major Examination

Time: 2 Hours

Please write your Serial Number on the front page of the answer sheet

Do not write anything on the question paper - not even a dot mark

1. With the help of a schematic show the direction of the momentum exchange between the Earth's surface and the atmosphere.

[5 Marks]

2. What are the different forms of energy present in the atmosphere? What is their relative composition? How do they vary with latitude and altitude? How are they transported by the mean flow (show the direction of energy transport for each component for each latitudinal belts)? Justify with reasoning how kinetic energy in the atmosphere is negligible?

[10 marks]

3. What is Ferrel cell? What is its driving force?

[5 marks]

4. Where does the land-ocean contrast theory of monsoon fail (e. g., what are the drawbacks of this theory)?

[5 marks]

5. From the following schematic find out in which direction (north/south) mass, momentum, and energy are transported by the flow?

[5 marks]

