

DEPARTMENT OF GEOGRAPHY

SCHOOL OF SCIENCE AND SCIENCE EDUCATION

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SECOND SEMESTER EXAMINATION 2011/2012 SESSION

COURSE CODE: MET 322

COURSE TITLE: INT. ATMOSPHERIC THERMODYNAMICS & PRECIPITATION PROCESSES

INSTRUCTION: Answer any four questions TIME: 2HOURS

- 1) Distinguish between any five of the following terms and processes :
 - a) Long wave and Short wave radiation
 - b) Kinetic energy and Momentum
 - c) Conduction and Convection
 - d) Stability and Instability of air parcel
 - e) Cloud droplet and Condensation nuclei
 - f) Riming and aggregation

- 2)
 - a) State the First and second Laws of Thermodynamics
 - b) Using clear illustrations, describe the following equations:
 - i) $dE = dW$
 - ii) $dE = dQ$
 - iii) $dE = dQ + dW$
 - c) What are the implications of the above equations on stability and instability of air parcel

- 3)
 - a) Prepare a brief treatise on Bergeron's Precipitation processes
 - b) Why Cloud Droplet does not fall?
 - c) Distinguish between Collision and Coalescence Precipitation processes

- 4) Briefly provide Explanatory notes on any four of the following:
 - i) Concept of Internal Energy
 - ii) Orographic lifting
 - iii) Rain Showers
 - iv) Hail storm
 - v) Convergence lifting

- 5) using Specific examples, describe the processes and formation of Lightning and Thunderstorm in the Atmosphere

- 6) Discuss the relevance of lapse rates in the stability and instability of the atmosphere